

# Best Readings in Power Line Communications

**Best Readings** is a collection of books, articles, and papers on a featured topic. This **Best Readings** topic is on **Power Line Communications (PLC)**.

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## ◆ Special Issues

Search and Specifications  
Channel Modeling  
Coupling  
Modulation & Coding  
MAC

“[Power line local area networking](#),” IEEE Communications Magazine, vol. 41, no. 4, April 2003.

“[Broadband is power: internet access through the power line network](#),” IEEE Communications Magazine, vol. 41, no. 5, May 2003.

“[Powerline communications and applications](#),” International Journal of Communication Systems, vol. 16, issue 5, June 2003.

“[Special issue on power line communications](#),” IEEE Journal on Selected Areas in Communications, vol. 24, no. 7, July 2006.

["Special issue on advanced signal processing and computational intelligence techniques for power line communications," EURASIP Journal on Advances in Signal Processing, vol 2007 .](#)

## ◆ Overview Books

[Powerline Communications](#), K. Dostert, Prentice-Hall, 2001.

Already a classic, this book reviews technical challenges and provides design guidelines for the use of power lines for telecommunications.

[Power Line Communications - Theory and Applications for Narrowband and Broadband Communications over Power Lines](#), Editors: H.C. Ferreira, L. Lampe, J. Newbury, and T.G. Swart, Wiley and Sons, Ltd., June 2010.

This is the most comprehensive text on power line communications available today and thus a good starting point for anybody entering the field, as well as researchers and practitioners already familiar with power line communications. It covers a broad range of topics (including channel modeling, standards, coding and modulation, coupling) pertinent to the design, implementation, and application of power line communications systems, with contributions by over 30 experts in the field.

## ◆ [Data Base](#)

The data base for Power Line Communications was created by the IEEE Communications Society Technical Committee on Power Line Communications. It is a comprehensive repository of publications related to power line communications. It also contains the proceedings of the International Symposium on Power Line Communications and Its Applications (ISPLC) from 1997 to 2004, which are not available online anywhere else.

## ◆ History

J.T. Tengdin, "[Distribution line carrier communications - an historical perspective](#)," IEEE Transactions on Power Delivery, vol. 2, no. 2, April 1987, pp. 321-329.

This paper presents some history but important, also the results from experimental trials. State of the art is 1987. It is written from the perspective of systems that General Electric and Rockwell International implemented. It considers noise, signal propagation, filtering at the input of the receiver and coupling mode. Many useful graphs with numerical parameters investigating frequency dependency are presented. The performance of the Golay error correcting code in case studies is presented.

**H.C. Ferreira and O. Hooijen, “[Power line communications: an overview](#),” Transactions of the South African Institute of Electrical Engineers, vol. 86, no. 3, Sept. 1995, pp. 145-161.** Wide coverage of topics. State of the art in 1995. Extensive bibliography of references pre-1995. Includes a systems level and historical overview. Topics include the channel with emphasis on noise and disturbances, impedance, coupling and channel modeling. Communications systems and solutions are discussed, as well as electromagnetic compatibility and interference. Some typical numerical parameters and graphs are presented.

**H. Ferreira, H. Grove, O. Hooijen, and A.J.H. Vinck, [Power line communication, in Encyclopedia of Electrical and Electronics Engineering](#) (ed. J. Webster), Wiley 1999, pp. 706-716.**

A very informative overview of historical developments, challenges, and opportunities using power line communications.

**N. Pavlidou, A.J. Han Vinck, J. Yazdani, and B. Honary, “[Power line communications: state of the art and future trends](#),” IEEE Communications Magazine, vol. 41, no. 4, April 2003, pp. 34-40.**

This paper presents a short but valuable overview of some fundamental physical considerations, and also the state of the art around 2003. It covers the channel, noise, modulation techniques, coding, medium access, standards and market. Some useful numerical parameters and graphs are presented for the channel and noise.

**A. Majumder and J. Caffery Jr., “[Power line communications: an overview](#),” IEEE Potentials Magazine, vol. 23, no. 4, Oct. - Nov. 2004, pp. 4-8.**

A good short tutorial introduction. State of the art in 2004. Wide coverage but not in analytical depth. Recommended as a first read with sufficient comprehensive coverage.

**M.S. Yousuf and M. El-Shafei, “[Power line communications: an overview - part I](#),” 4th International Conference on Innovations in Information Technologies, Dubai, 18-20 Nov. 2007, pp. 218-222.**

**M.S. Yousuf, S.Z. Rizvi, and M. El-Shafei, “[Power line communications: an overview - part II](#),” Information and Communication Technologies: From Theory to Applications, Damascus, 7-11 April 2008, pp. 1-6.**

This is a two part paper. It covers a short overview and historical introduction, without great analytical depth. The emphasis is on introducing standards. It briefly discusses some fledgling standards around 2008. The paper has most value in introducing the Homeplug standards.

**M. Schwartz, “[Carrier-wave telephony over power lines - early history](#),” IEEE Communications Magazine, vol. 47, no. 1, pp. 14-19, Jan. 2009.**

Excellent account of the use of power line communications for voice communications in the early 1900s.

## Topics

- - [Standards and Specifications](#)
  - [Channel Modeling](#)
  - [Coupling](#)
  - [Modulation & Coding](#)
  - [MAC](#)

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