The Telkonet iWire System™

Frequently-Asked Questions - General

FAQs

Definitions

What is powerline communications (PLC) technology?

Powerline communications (PLC) technology refers to technology that enables data transmission and network communications using existing indoor electrical wiring as the primary transfer medium. With PLC, network traffic can be sent and received through standard power outlets. Since PLC uses an existing power infrastructure, the basic network is already in place – a major benefit in situations where environmental issues, cost, security concerns, portability needs and other requirements make traditional CAT-5 or wireless (802.11x) technology impractical or impossible.

What is broadband over powerline (BPL) technology?

BPL and in-building BPL are the two types of BPL technology. BPL typically refers to the transmission of data over the outside utility power lines whereas in-building BPL uses PLC to network within a building.

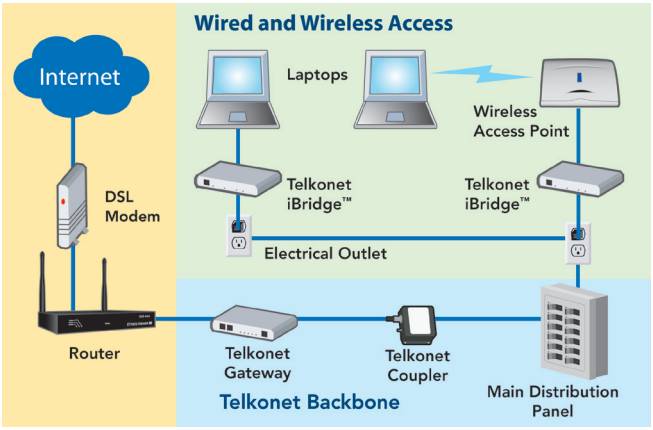
System Overview

What is the Telkonet iWire System?

The Telkonet iWire System transforms a building's internal electrical wiring into an intelligent broadband networking platform that supports today's technologies and accommodates new technologies as they evolve, protecting your investment. The system is designed for deployment in challenging situations where traditional connectivity using hard-wired (CAT-5) or wireless LAN technology is not economically, environmentally or technically feasible.

How does Telkonet's PLC technology work?

In general, the Telkonet Gateway or Telkonet eXtender™ converts an Ethernet signal into a PLC communication format and injects that into the electrical infrastructure for the building. The Telkonet iBridge™ recovers the PLC signal and converts it back into standard Ethernet format for use in end-user devices.



Telkonet's iWire System enables broadband access over electrical wiring, converting power outlets into high-speed data networks.

Is Telkonet's PLC technology safe?

Yes. The Telkonet iWire System is FCC Part 15 compliant, UL60950 listed and CE approved.

How secure is Telkonet's iWire System?

Telkonet's patent-pending Telkonet iBridge-to-Telkonet Gateway architecture allows the system to be configured for various degrees of security. By default, each Telkonet iBridge is isolated from every other Telkonet iBridge on the PLC network. Data in transit between the Telkonet iBridge and the Telkonet Gateway is encrypted with 56-bit Data Encryption Standard (DES).

For government applications, Telkonet's system implements 256-bit Advanced Encryption Standard (AES) for enhanced security of data communication over the PLC network. The combination of AES encryption, FIPS 140-2 compliance and network configuration management provided by the Telkonet Gateway, guarantees security equivalent or better than traditional CAT-5 and is a substantial improvement over the wireless standards (802.11b and g) currently available on the market.

Does Telkonet's iWire System support Virtual Private Networks (VPNs)?

Yes. The system simply provides the transport mechanism for VPNs.

Does Telkonet's iWire System operate on open standards?

Yes; it adheres to open standards for Ethernet communication.

Does the Telkonet system meet any industry standards for quality?

Yes. The system is UL60950 listed, FCC Part 15 compliant, CE approved and is certified to FIPS 140-2 standards. In addition, Telkonet's iWire System is the subject of an ongoing certification program around the world.

Can Telkonet's system be extended using wireless technology?

Yes. A wireless system can be used to network a multi-building environment with the use of Telkonet eXtenders. The Telkonet iBridge can also be used to provide wireless access to end users via a WAP.

Telkonet iWire System Background

When did Telkonet develop its patented powerline communications (PLC) technology?

The technology has been under development by Telkonet and its founders since 1998; manufacturing of the Telkonet iWire System started in January 2003.

Has Telkonet's powerline communications (PLC) technology been proven?

Yes. The Telkonet iWire System currently provides high-speed network connectivity to hotels, multi-dwelling units, schools and government facilities around the world, including Choice Hotels International, Sandman Hotels, Inns and Suites, America's Best Value Inn, Best Western, Trump properties in New York, U.S Navy, U.S. Marine Corps, and many other leading companies. See Telkonet's web site for many case studies across a wide range of deployment models.

Telkonet iWire System versus HomePlug

How is Telkonet's system different from HomePlug?

Home Plug is intended primarily for the single family residential market, while Telkonet's iWire System is intended for large installations or multi-building environments that require network management. Leveraging and improving upon the HomePlug 1.0 standard, Telkonet's system is a robust, scalable networking solution that provides faster, more secure and more stable data transmission than off-the-shelf solutions designed for the home market. In addition, the Telkonet iWire System is scalable to hundreds of users, more robust than commodity HomePlug products, and provides user management features unavailable in standard HomePlug products.

What advantages does Telkonet PLC have over HomePlug-based PLC solutions?

HomePlug 1.0 primarily targets the residential market where small, peer-to-peer networks are the norm. The Telkonet iWire System is intended for larger facility installations where performance, reliability, scalability, administrative control, and security are critical. Telkonet's system further improves upon the HomePlug 1.0 standard, incorporating modifications to meet the stringent demands of commercial market applications and the federal government.

These include centralized management of data communications and network traffic through simple network management protocol (SNMP), command-line, and web-based interfaces (HomePlug PLC nodes communicate on an ad-hoc basis); improved security to restrict access by and between individual Telkonet iBridges™ as determined by network security and data access policies; enhancements to improve performance and ensure the integrity of data transmission over larger networks.

With a broader operating reach, the Telkonet system operates seamlessly in a broad expanse of facility configurations in the commercial and government sectors. Telkonet's government solution implements 256-bit AES encryption and is FIPS 140-2 compliant, making it the only PLC offering on the market that meets the stringent security requirements for data transmission in U.S. government networks as set by National Institute of Standards and Technology (NIST) and the Department of Commerce.

By law, U.S. government purchasing agents must prioritize acquisition of FIPS 140-2 compliant solutions over non-compliant technology. The financial community also uses FIPS 140-2 as a benchmark for products handling monetary transactions. In addition, recognized quality organizations

such as the International Standardization Organization (ISO) and the American National Standards Institute (ANSI), have also adopted the standard.

Installation

What equipment do I need to deploy Telkonet's iWire System?

Telkonet components are lightweight, compact and straightforward to install. The system uses four key components – the Telkonet Gateway, the Telkonet eXtender™, the Telkonet Coupler, and the Telkonet iBridge™ – to deliver networking in a facility. In some environments, Telkonet eXtenders are necessary to extend the reach and amplify the signal within the building. Telkonet components are UL 60950 listed, FCC Part 15 compliant, FIPS 140-2 compliant, and CE certified.

Telkonet Gateway – Acts as a remotely manageable network switch which converts data between a 10/100 Ethernet port and a PLC interface. Each Telkonet Gateway supports up to 63 Telkonet eXtenders, 1,023 Telkonet iBridges and up to 4,096 Ethernet endpoints.

Telkonet Coupler – Injects the PLC signal from a Telkonet Gateway or Telkonet eXtender into a building's electrical wiring.

Telkonet eXtender™ – Provides additional reach and scalability for networks that cannot be properly covered by a single Telkonet Gateway or multi-building environments; also provides a method to segment the PLC network at address large and dispersed electrical systems within a single building.

Telkonet iWire System Compared to Other Wired and Wireless Solutions

	Wired	Wireless	Telkonet iWire System
Installation	Time-consuming, taking from 2 weeks to months to install cables; expensive; disruptive.	Time-consuming, disruptive. Must install wires to connect wireless access points to the network. Physical or environmental issues can limit effective deployment.	Simple – installed within hours/days with minimal equipment, with minimal new wiring and with minimal to no disruption to building occupants. Low cost.
Cost	High initial costs to wire a building; minimal ongoing costs.	High initial costs, minimal ongoing costs. Can cost more than wired with the need to run cables and install additional wireless access points.	Low installation and operating costs.
Reliability	Extremely reliable.	Interference from various sources and types of construction reduce reliability.	Extremely reliable.
Throughput	Up to approximately 80 Mbps in real-world applications. Requires structured cable plant.	Up to approximately 5.5 Mbps for 802.11b (utilizing 802.11b chipset) in real world applications. Physical obstacles and distance significantly degrade performance.	Can exceed 6 Mbps in the current product version, in real-world applications. End user performance is dictated by the speed of the broadband connection.
Security	Physical security only.	Poor – fairly common for users to be able to access other users' networks and accounts.	Physical security. Secure 56-bit Data Encryption Standard (DES) and 256-bit Advanced Encryption Standard (AES) for government applications.
Mobility	Limited to area serviced by wall jacks.	Very good; signal may be compromised by dense walls or other materials.	Very good – Internet and data access at every electrical outlet.

Telkonet iBridge™ – An intelligent, single-port Ethernet-to-PLC device converting an AC outlet to a LAN drop, enabling a user to connect a computer or IP device to the PLC network.

How many Telkonet iBridges do I need to order?

Typically, you will need a Telkonet iBridge for each high-speed Internet connection that you require. The Telkonet iBridge can be connected to a switch, router, or wireless access point (WAP) to service multiple, simultaneous users.

How long does it take to install Telkonet's iWire System?

Installation can be completed anywhere from a few hours to a couple of days. A licensed electrician is needed only for a very limited amount of time to install the Telkonet Coupler(s); the number will depend on the physical layout of the facility. Once the Telkonet Coupler(s) are installed and connected to the Telkonet Gateway and Telkonet eXtenders™ (as required), the network backbone is ready for use.

How easy is it to connect to the Internet with Telkonet's iWire System and how do you connect?

It is very simple to connect to the Internet. Since the Telkonet iBridge provides a standard Ethernet port, there are no drivers to install and no configuration is needed.

1. Plug the Telkonet iBridge into an electrical outlet;
2. Connect your computer to the Ethernet port on the Telkonet iBridge; and
3. Turn on your PC.

System Benefits

Can the Telkonet iWire System work in both old and new buildings?

Yes. Any electrical wiring that meets the electrical code requirements works well with Telkonet's high-speed network. The Telkonet system is designed to overcome spikes and noise in the electric wiring. Not having to rewire a building is a major benefit to older or historic buildings where environmental issues or architectural preservation may be a concern. For new buildings, with the Telkonet system, the installation cost is significantly less expensive than with a CAT-5 installation.

Can the Telkonet iWire System provide broadband Internet and data access to multiple buildings?

Yes. The system can accommodate situations, such as apartment complexes, with more than one building. Telkonet uses a variety of methods and technologies to address a multi-building environment. The system can be combined with other networking technologies to help tie multiple buildings together into one cohesive system.

Can the Telkonet iWire System work with all types of broadband signals?

Yes. The Telkonet iWire System works with any type of broadband signal – regardless of the source or provider – including DSL, T1, E1, cable and satellite. A simple Ethernet connection is made between the building's broadband connection CPE and the Telkonet Gateway.

Can Telkonet's iWire System enable Internet connectivity anywhere, such as in my own office, meeting rooms, offices and training rooms?

Yes. Internet access is enabled at any electrical outlet. With Telkonet's iWire System, users can access the Internet from every electrical outlet in every room, including meeting rooms and public areas.

Can the Telkonet iWire System support other applications, in addition to broadband Internet and data access?

Yes. The Telkonet iWire System may be extended to include wireless Internet "hot spots" to specific common areas within a building. Applications supported by the Telkonet system include virtually anything that can be encapsulated into an IP packet. Examples of applications include local area networking, high-speed Internet connectivity, splash pages/disclaimers, closed circuit surveillance and security, elevator advertising, two-way video conferencing, VoIP telephony, point-of-sale systems, and energy and building management.

What are Telkonet's cost advantages?

The Telkonet iWire System has many distinct cost advantages. Deployment can be completed in as little as a few hours, minimizing disruption and loss of business during the installation. The system is scalable, requiring only additional Telkonet iBridges to add new users. The system can be moved or relocated with little or no cost.

How flexible and portable is Telkonet's system?

Telkonet's system is extremely flexible and portable. By installing Telkonet Couplers and Telkonet Gateways, a network backbone is created that is instantly ready for use and accessible via a facility's power outlets. The Telkonet iBridge can be plugged into any available electrical socket, providing fast network access to users in any part of a building or facility wherever there is power.

In the event that a building or location is decommissioned, virtually all of the network equipment can be recovered in a matter of a few hours – even in the largest facility. The hardware can then be quickly redeployed in a new location, providing investment protection. In temporary deployments, a complete LAN can be deployed as part of the electrical system using simple extension cords. The need to run dedicated network cables is eliminated, along with the potential operational security hazards that can result from the use of wireless technologies.

Using the Telkonet iWire System

What software do I need to manage my Telkonet system?

The Telkonet system provides embedded management interfaces to configure and monitor network access and traffic. Either a web browser or telnet client and administrative rights are required to centrally manage the Telkonet system.

Do I need to load software or modify my network settings to get connected to the Internet?

No. Since the Telkonet iBridge provides a standard Ethernet port, there are no drivers or additional software to install; and, typically, computer settings do not need to be changed.

Do I need to change my current settings or download software to use the Telkonet iWire System?

Not necessarily. The Telkonet system is a transparent Ethernet-PLC bridge. If your laptop is configured to work properly on the network you are accessing, there is no difference between connecting via a Telkonet iBridge or an RJ-45 wall jack.

Will my existing network settings be affected by Telkonet's system administration software?

No. In the vast majority of cases, there is no need to change any system configuration either on the router or on individual computers.

Can I send and receive email with Telkonet's iWire System?

Yes. You can send and receive email. Any typical function that you would normally conduct via the Internet can be conducted when you are connected to theTelkonet iBridge.

Can I connect to my company's network with Telkonet's iWire System?

Yes. Telkonet's iWire System is simply a transport medium on a network. The system does not affect virtual private network (VPN) performance. Subsequent connection to your company's network is a function dictated by your company's security policies.

www.ivacommunications.net

IVA Communications, LLC
911 Silver Spring Avenue, Ste., 202
Silver Spring, Maryland 20910
management@ivacommunications.net

Phone: 301.585.0746
Toll-Free in the US: 800.326.9936
Fax: 301.585.0747