INSTEON
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The State of Home Control

INSTEON Wireless Home Control Networking:

The Right Technology at the Right Time

Home control enables consumers to manage their homes either from home or remotely and provides a much richer experience than what is traditionally thought of as home automation. By allowing disparate devices located anywhere inside or outside the home to be connected, numerous personalized applications become possible, enabling greater efficiencies (from time savings to energy efficiency), increased security, improved multimedia experiences and more.

The leading wireless home control technology, called INSTEON, creates a low-band wireless network in the home that enables any device with the embedded INSTEON technology to be connected to another and managed from a remote control, keypad, light switch, computer, media center or mobile device. What makes INSTEON different is that INSTEON combines wireless radio frequency (RF) with the home's existing electrical wiring, ensuring that it works everywhere in the home. With INSTEON's inherent out-of-the-box interoperability, any INSTEON-enabled device, regardless of the manufacturer, automatically becomes part of the INSTEON network as soon as it is installed. Today, INSTEON has captured 40% of the home control market by concentrating on key core home subsystems.

The State of Home Control

Three-quarters of U.S. homes contain computers, and over two-thirds of them are connected to the global Internet. Wireless Wi-Fi networkin is used in over 20% of U.S. homes, and at an ever-increasing number of commercial "hotspots" around the world. More than 65% of Americans have cell phones. But light switches, door locks, thermostats, smoke detectors, security sensors, and remote controls cannot talk to one another because the networks that share computer data or connect cell phones together are far too complex and expensive to be built into *infrastructure* devices that cost only a few dollars.

Many familiar products can be improved by adding the ability to interact over a network, and a myriad of new products and consumer applications become possible when devices can routinely be connected to a simple, affordable and reliable "nervous system" in the home. While broadband communications are required to move multimedia throughout the home, the home control network requires only a small amount of data transfer for devices to communicate with each other. Home control systems now have the potential to include virtually any consumer device—anything that can be embedded with a chip that enables it to "talk" to other devices—and this market is poised for exponential growth.

INSTEON Wireless Home Control Networking Technology

INSTEON links together core home systems such as lighting, security, comfort control, consumer electronics, appliances and safety sensors. Any device with an embedded INSTEON chip can become part of the INSTEON home control network. INSTEON-enabled products bridge to Wi-Fi LANs, the Internet and telephony and entertainment distribution systems, allowing INSTEON to serve as the foundation for a very robust integrated home control environment.

INSTEON allows users to automatically and/or remotely monitor and control many functions in their homes, from lighting scenes to temperature control to wireless security cameras, as well as performing “mission-critical” functions such as remotely locking doors and sending email alerts when flooded basements or intruders are detected. INSTEON can be incorporated into washing machines, dryers, dishwashers, HVAC systems, garage door openers, audio and visual devices and more. This kind of home control promises to change all of our lives for the better, but it only happens with the right communication infrastructure.

INSTEON enables simple, low-cost devices to be networked together using the powerline or wireless RF, or both. INSTEON ensures that the network will work everywhere in the home. With INSTEON, devices are peers, meaning that any device can transmit, receive or repeat other messages without requiring a master controller or complex routing software. Adding more devices makes an INSTEON network more robust and virtually guarantees that there will be no dead spots.

The INSTEON Home Control Network

INSTEON has lined up the right partners at the right time by concentrating on manufacturers of core home subsystems such as the following:

- Security, health and safety
- Environmental
- Resource management (energy, water)
- Lighting control
- Pool, spa and water features
- Home entertainment
- Appliances
- Home automation

The INSTEON home control network provides a vast opportunity for manufacturers of core home subsystems that have selected INSTEON as their home control networking technology, including the following brand leaders:

- **Balboa Instruments, Inc.**, the world's largest supplier of electronic controls to the pool and spa industry
- **BRK Electronics,** a manufacturer of residential safety products, including fire alarms, carbon monoxide detectors and security sensors, sold under First Alert and other brand names
- **Broan Nu-Tone**, the ventilation-fan market leader, with over 80% market share
- **D-Link,** the worldwide leader in networking solutions for the home
- **Venstar**, a leading manufacturer of residential thermostats, sold under the Carrier brand
- **Weiland Sliding Doors**, a manufacturer of European-style sliding window doors, distributed by Anderson and Pella Windows

"Establishing relationships with companies and brands that are well known to builders and their subcontractors is a key step in building a broad-based market presence," said Bill Ablondi, director of home systems research for Parks Associates. "Consumers don't wake up in the morning thinking about which control systems they're going to install, but our research confirms that most builders are constantly on the watch for products that can differentiate their homes in the market."

INSTEON-enabled products coming to market in 2007 include those addressing lighting control, security and safety, ventilation and comfort control, pool and spa control, access control and environmental control, along with multiple home automation software applications that make home control and management possible from anywhere in the world.

INSTEON Technology Attributes

The following attributes characterize INSTEON technology.

Instantly Responsive. INSTEON devices respond to commands with no perceptible delay. INSTEON's signaling speed is optimized for home control—fast enough for quick response while still allowing reliable networking using low-cost components.

Out-of-the-Box Interoperability. INSTEON is the only technology to offer out-of-the-box interoperability in one seamless home control network. INSTEON allows various manufacturers to embed the INSTEON technology in their products and ensures that products will automatically interoperate.

Easy to Install. Installation in existing homes does not require any new wiring because INSTEON products communicate over powerline wires or use the airwaves. Users never have to deal with network enrollment issues because all INSTEON devices have ID numbers preloaded at the factory—INSTEON devices join the network as soon as they're powered up.

Simple to Use. Getting one INSTEON device to control another is very simple—just press and hold a button on each device for 10 seconds, and they're linked. Because messages are confirmed, INSTEON products can provide instant feedback to the user, making them straightforward and user-friendly.

Reliable. An INSTEON network becomes more robust and reliable as it is expanded because INSTEON devices repeat messages received from other INSTEON devices. Dual mesh communication using both the powerline and RF ensures that there are multiple pathways for messages to travel.

Affordable. INSTEON is simple and compact because all INSTEON devices send and receive messages in exactly the same way, without requiring a special network controller or complex routing algorithms. The cost of networking products with INSTEON is held to an absolute minimum because INSTEON is designed specifically for home control applications and not for transporting large amounts of data.

Compatible with X10. INSTEON and X10 signals can coexist with each other on the powerline without mutual interference. Designers are free to create hybrid INSTEON/X10 products that operate equally well in both environments, allowing current users of legacy X10 products to easily upgrade to INSTEON without making their investment in X10 obsolete.

Designed for the Mass Market. The most significant differentiator for INSTEON is that it was designed to reach the mass market. INSTEON has the *optimum* combination of affordability, simplicity and reliability. INSTEON allows manufacturers to integrate home control technology at a low cost, enabling them to offer consumers products that are affordable. INSTEON is simple to integrate as well as easy for electricians and DIY consumers to install. And, INSTEON is a reliable home control network technology that ensures that products from various manufacturers will work together so that consumers can create compelling applications in the home.

The Right Technology at the Right Time

Home control addresses everything from temperature control and security systems to appliances and irrigation. These applications support a variety of growing trends: increased cocooning, the demand for greater energy efficiency due to rising energy costs, and the need—especially on the part of women—to save time by automating common tasks.

Parks Associates projects revenues for home control systems will grow 10% to 12% per year and reach nearly $6 billion by 2012. Founder Tricia Parks advises all companies—from silicon providers to consumer electronics manufacturers that are banking on a slice of the digital home market—to look at market opportunities beyond the living room. To fulfill the vision of the completely connected home, companies need to evaluate if and how home control fits into their home networking strategies.

“While companies are naturally acting to seize opportunities offered by a new round of entertainment options and benefits, there are also multiple opportunities beyond entertainment,” says Parks. “Long-term winners will embrace technologies that fulfill consumers’ expectations for a truly connected home—one that includes but is not limited to networked entertainment and computing devices.”