

Smart Energy Device Types

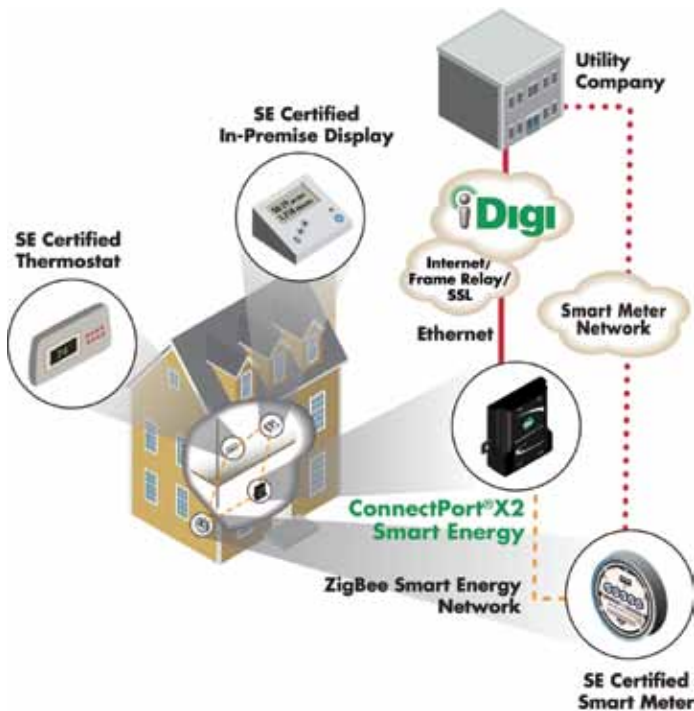
Creating a device that will be able to communicate on a ZigBee Smart Energy (ZSE) network can be a fairly straightforward matter or a complex task, depending on your approach. Sometimes designing from the ground up makes the most sense; other times, a modular approach allows you to get to market more quickly. Many communication and function options for ZSE devices exist, but the ZSE public profile currently focuses on eight different device types:

1. ESP/ESI (Energy Service Portal/Energy Service Interface)
2. Metering Device
3. In Premise Display
4. Programmable Communicating Thermostat
5. Load Control Device
6. Range Extender
7. Smart Appliance
8. Prepayment Terminal

Creating a ZigBee Smart Energy Device

While each device type differs in its operation, they are all needed to implement the Key Establishment cluster required for security on a ZigBee network. To create a ZSE device you must:

1. Understand and implement the Key Establishment cluster
2. Implement whatever functions are required for your device



Smart Energy Module Options

Digi offers several modules that can enable ZigBee Smart Energy product development. As an example, the XBee® SE module was used to create an ESI device out of the ConnectPort® X4 gateway, a ZigBee-to-Ethernet/cellular gateway that Digi originally designed for general purpose use. The gateway did not implement the Smart Energy profile or the required Key Establishment cluster. With the Key Establishment cluster built into the firmware, the XBee SE module was designed into the ConnectPort X4 to enable the security aspects of the SE network. The rest of the ESI functionality was implemented on the processor that resides within the gateway.



If you do not have a native processor (or your processor is already loaded down), the newly released programmable XBee® ZB module makes it easy to create a self-contained device that will operate ZigBee Smart Energy. The module consists of two processors. One processor handles all the PHY and MAC layers as well as the profile and Key Establishment cluster. The other processor, entirely open to end user code, has 32K of flash and 2K of RAM that can be used to implement whatever clusters or functions are necessary for different device types.

As ZigBee Smart Energy continues to evolve, the XBee SE and programmable XBee modules will allow more device types and expanded functions for long-term deployments. All adjustments necessary for ZigBee Smart Energy 2.0 will also be implemented and maintained in both module types, allowing for easy development of ZSE devices even in the years to come.



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NEW! Programmable ZigBee modules

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- ◆ iDigi™ Energy solution bundle
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The industry's first ZigBee Smart Energy modules



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Modules



Adapters

Digi® offers the industry's most complete set of hardware and services for your ZigBee-enabled solution. XBee products support a wide range of applications, including Smart Energy, Home and Building Automation, Remote Device Management and more. With a host of modules, stand-alone adapters, IP-enabled gateways and iDigi data services, Digi has the tools to see your project through from beginning to end.



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