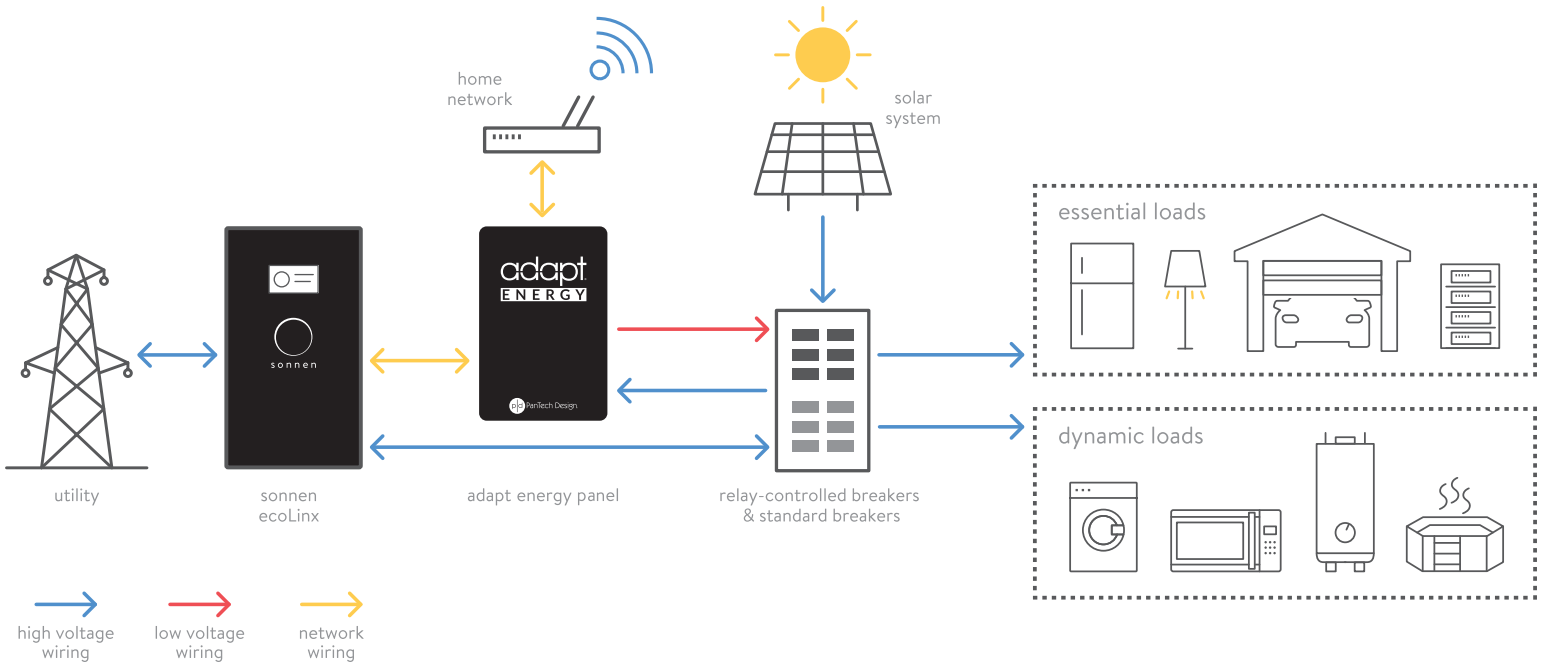
adapt ENERGY



What is Energy Automation?

Energy Automation is the convergence of home automation, intelligent energy storage, controllable breakers and solar technologies working seamlessly together. The operation of a smart home can be significantly enhanced when energy management is incorporated into the solution. While traditional home automation systems focus on providing comfort to the homeowner by tailoring the system to their specific wants and needs, energy automation takes that experience to another level. By managing energy functions within the home, energy automation not only ensures that the home is powered in the cleanest most efficient way possible, but also ensures the homeowner is protected, even during an outage, with little or no interaction from the homeowner or disruption to their daily lifestyle.

Adapt Energy communicates with intelligent energy storage to gather information about the home's energy usage, storage, solar production, and more. Coupled with Adapt Energy's own data, like weather forecasts, it makes smart energy decisions throughout the day, to utilize energy in the cleanest most efficient way.

What's in an Energy Automation System?

The ultimate smart home is driven by energy automation. To reap the benefits of energy automation, it is important that the Sonnen ecoLinx "energy ecosystem" includes a combination of home automation and renewable energy devices, such as:

- Sonnen ecoLinx: This is the energy storage system that provides storage as well as grid and solar information to the Adapt Energy Panel.
- Adapt Energy Panel: The hardware and software that manages energy by controlling breakers and connecting to leading home automation systems.
- Renewable Energy Source (solar): Alternative source of energy that not only charges the ecoLinx, but also offsets use of the utility grid during the day by using solar energy to power loads in the home, even during an outage.
- Lighting Control: Manages lights accordingly during the day/night to maximize energy while also providing lighting during power-related and grid outage events.
- Shade Control: Manages shade scenes to enhance the atmosphere and lower internal heat in the home.
- Climate Control: Manages set points of HVAC systems relative to grid loss or other events.
- Controllable Breakers: Provide the ability to dynamically change what is powered by the ecoLinx battery.
- AV Systems: Speakers, televisions and media all tied together.

Use Cases for Energy Automation

Dynamic Battery Backup

Systems with controllable breakers, a Sonnen ecoLinx battery, and an Adapt Energy Panel can benefit from the smart configurable backup functionality. The image on page 1 details a main panel installation that allows for dynamic battery backup strategies with controllable breakers. This allows the system to not only focus on managing excess energy production over what is consumed, but further tailors energy consumption based on need and priority defined by the homeowner. In the event of a power outage, the system will provide backup power to specific circuits based on predefined rules in the Adapt Energy Panel. An example scenario is as follows:

A power outage occurs and the Sonnen ecoLinx begins providing backup power to the main panel (which is also powering the home network equipment). First, the user is notified by Adapt Energy that the Sonnen ecoLinx is providing backup power to the home and is then presented with options on what they want to power with the battery. If no option is selected, the system can be configured to default to a predefined mode of operation.

The Adapt Energy Panel then sends the selected profile to the controllable breakers, which actuate the selected circuits to an “on” or “off” position based on the user’s selection or predefined mode of operation.

Predictive Weather Response

Adapt Energy uses weather forecast information to dynamically modify the battery’s backup reserve setting. For example, if the ADAPT Energy Panel detects a severe thunderstorm, the system will automatically increase the Sonnen ecoLinx’s energy reserve to 100% to prepare the user for a potential loss of grid power.

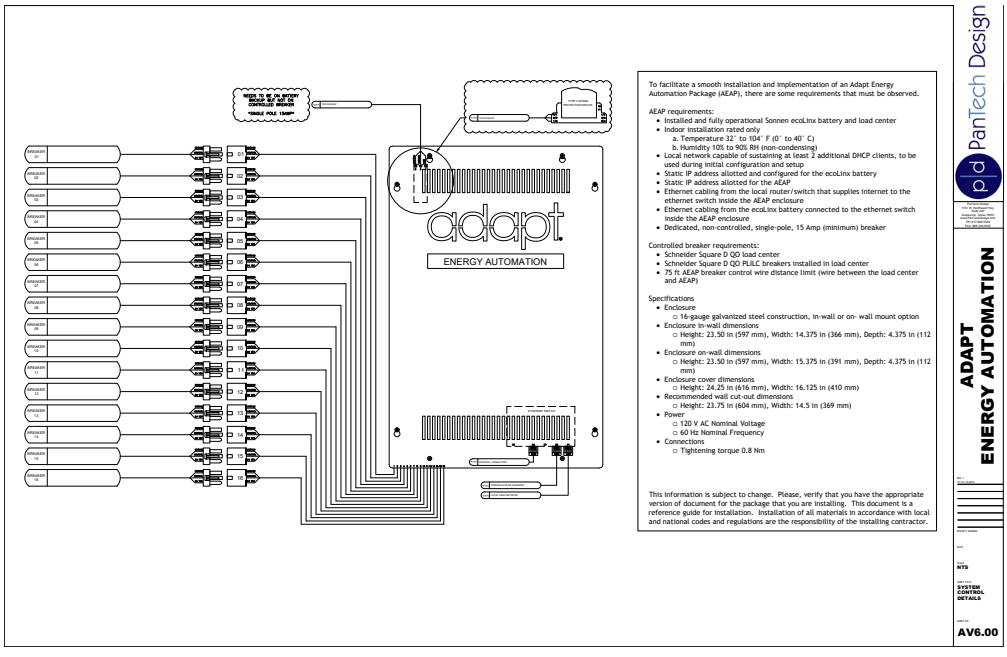
This further enhances the system flexibility by reserving the battery capacity for backup power when it is needed most. Adapt Energy will also notify a home automation system to adjust things like lighting, shades, thermostats and other devices, to support the home’s needs.

Use Cases for Energy Automation

Responsive Load Control

Adapt Energy optimizes the use of available clean energy when it is abundant and less expensive (i.e. during low tariff or off-peak times) and maximizes the use of clean energy when it is less abundant and grid energy is more expensive (i.e. during peak periods). By working together, the Adapt Energy Panel and Sonnen ecoLinx systems decrease load usage and discharge the battery when appropriate to fully manage and maximize energy usage in the home.

For example, during a time-of-use (TOU) window, the ecoLinx and Adapt Energy can make adjustments in the home to reduce energy usage, without disruption to the homeowner. First, the ecoLinx system can effectively “flood the peak period” by using clean, stored energy to power the home rather than relying on the grid. Secondly, load shedding commands could be deployed to maximize and extend the ecoLinx’s stored energy. As an example, lowering the shades, dimming the lights, increasing the thermostat and turning off non-essential loads could decrease energy consumption by 2,000 W - for a 10kWh Sonnen ecoLinx system. That’s an additional 2 hours worth of energy!



adapt® ENERGY

Adapt Energy Panel ($7,000.00 *USD*)

- Adapt Energy Processor
- UPS for devices in enclosure only
- Network switch for battery and processor only
- Adapt Energy enclosure 14 3/8” X 23 1/2”
- System Requirements Document, Help File, Drawings
- 4 hours off site support
- Ground shipping (U.S. and surrounding)

Features

- Control of up to 16 relay-controlled breakers per panel
- Smart Weather Forecasting & Backup
- Smart Configurable Backup (for up to 16 relay-controlled breakers per panel)
- Easy web utility setup
- Information and control from iPhone or Android phone app
- Built-in UPS to sustain initial power loss (AE equipment only)
- Built-in ethernet switch to connect to existing network (ecoLinx and AE processor only)

Not Included — anything not specified above

- Sonnen ecoLinx battery
- Relay-controlled breakers
- Required wiring outside of AE enclosure
- On-site support
- Taxes

All prices are subject to change without notice.

FAQ

What is needed for the most basic Energy Automation System?

A Sonnen ecoLinx battery, the Adapt Energy Panel, and controllable breakers.

What does a basic Adapt Energy system do?

Predictive Weather & Dynamic Battery Backup along with the standard ecoLinx features.

How many Adapt Energy Panels are needed per project?

You will need (1) Adapt Energy Panel for each ecoLinx unit.

Does an Adapt Energy system require solar?

No, the ecoLinx system can charge from the grid when energy is more abundant and "clean" during off-peak times and re-deploy it during peak periods. All energy automation functionality and applications are still possible (Predictive Weather Response, Dynamic Battery Backup, and Responsive Load Control).

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Where do I get the Adapt Energy Panel?

You will purchase the Adapt Energy Panel from PanTech Design.

Which controllable breakers do I need?

The breakers required are manufactured by Schneider Electric. They are SquareD breakers in the QOPLILC line in the Power Link series.

Example Part Number: (single-pole 15 amp controllable breaker) QO115PLILC

Where do I buy the controllable breakers?

The controllable breakers can be purchased from PanTech Design or a stocking distributor. PanTech Design will sell the single-pole breakers for $60.00 USD and the double-pole breakers for $80.00 USD. This price does not include shipping or tax.

Which breaker panel do I need for the QOPL Series Breakers?

Any QO Series load center from Schneider Electric can support the QOPL Series breakers. Please note that the QOPL Series breakers are not compatible with the Schneider Electric HomeLine series load centers.

All prices are subject to change without notice.

FAQ

Does ecoLinx "talk" directly to home automation systems?

An Adapt Energy Panel is required to connect to home automation systems.

How do I know which loads require controllable breakers?

Controllable breakers are only needed for loads that need to be powered on and off during a grid outage. There are three types of loads:

Massive Loads should always be OFF in an outage situation (e.g. water heater, hot tub, etc.) Any load over 7,000 watts must be treated as a massive load. These may not need controllable breakers depending on the design.

Critical Loads should always remain ON in an outage. (e.g. fridge, network, router, Adapt Energy Panel, etc.) and do not need controllable breakers, in most cases.

Dynamic Loads are loads the customer may wish to stay ON depending on the outage situation. These loads should be focused on when specifying the load center to ensure that the ecoLinx can support both the Critical and Dynamic loads when they are all on.

How do I know what size breakers I need?

Breakers will be sized based on an electrical design prepared by an electrician, in conjunction with Sonnen.

How do I eliminate the Protected Loads Panel (PLP)?

By placing controllable breakers in the main panel to dynamically manage loads in the event of an outage. Any load that needs to be turned ON in an outage (including critical loads) will require a controllable breaker.

Does the Sonnen ecoLinx directly control the breakers?

No, an Adapt Energy Panel is required in order to control the breakers.

What are my next steps?

For more information, and to help us better assist you with next steps, please complete the Energy Automation Inquiry Form.