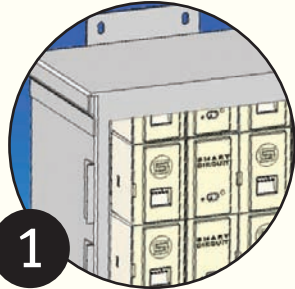


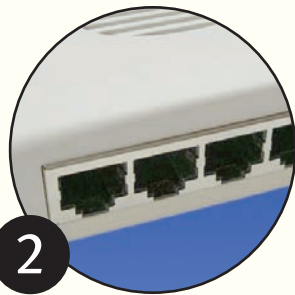
SMART CIRCUIT

The intelligent electricity monitor that can measure and switch loads via the Internet



1

Hard-wire Smart Circuit into electrical panel



2

Connect to the web via ethernet hub



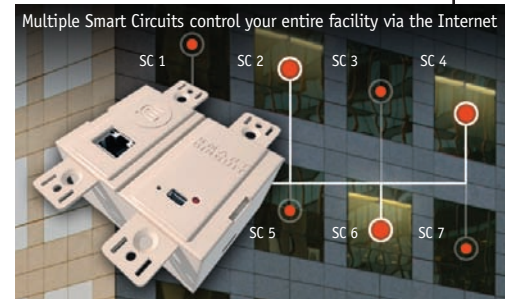
3

Power switching and real time data via the web

View sample data – wattsupmeters.com

Take control of your buildings electrical consumption, and costs, with the Smart Circuit energy management system.

The Smart Circuit is a web-enabled electricity controller that provides users real time data and actionable rules for remotely controlling electricity via the internet – a sophisticated, scalable, yet affordable energy management system for residential and commercial applications. The Smart Circuit allows you to take control of your electricity consumption, access data and switch loads, reduce your carbon footprint, lower your energy bill, and automate load shedding and KWH reduction via a user-friendly web interface. And, the Smart Circuit is available now – you don't have to wait for the "Smart Grid" – and typically provides a payback within 2 years – and that is without a subsidy or government rebate**.



Automate load shedding and KWH reduction – via the internet.

Designed for permanent, hard-wired applications (for 100v - 250v, 20 amp, 50/60 Hz circuits), the Smart Circuit is the missing link for modern energy control systems – working in conjunction with solar, wind, smart meters, etc. – it provides not only the data, but actionable steps to control usage immediately. The Smart Circuit in-building controllers will typically be installed in a panel enclosure box, in-line to the enclosure that houses circuit breakers (the "ears" snap off in this case and din rail is used) – multiple smart circuits aggregate data, and turn on/off specific loads automatically based on data parameters you control. For example, 10 Smart Circuits monitor 10 different loads, and when total power exceeds user configurable levels, power to Smart Circuit "2" and "7" will be turned off.

Or, a Smart Circuit can be installed in a double gang box (blue plastic box available at Home Depot and Lowe's) and wired to an existing outlet to control specific loads, such as a window air conditioner. Regular switch covers can be attached to the "ears". Smart Circuits are ideal for lighting circuits, outlet circuits with lots of vampire or leaker loads, large hard-wired appliances such as electric hot water heaters, washer/dryers, HVAC systems, pumps, blowers, and refrigerator/freezers. Smart Circuits are also ideal for home automation projects where it is important to remotely turn circuits on or off.

Real time data – because you can't manage what you don't measure.

A Smart Circuit measures a load in real time, and outputs that data in real time over the internet, presenting data (watts, volts, amps, watt hours, max. watts, max. volts, max. amps, min. watts, min. volts, min. amps, pwr. factor, pwr. cycle, frequency and volt-amps) in both table and graph formats. Please see the demo data at wattsupmeters.com. Smart Circuits can also operate as dataloggers, recording all the data internally into non-volatile memory (the data doesn't disappear even if it loses power). And based on the data measured, Smart Circuits allow the user to switch loads on and off, either manually or automatically based on user configurable rules. The data from multiple Smart Circuits (monitor and control every circuit in a house or office building) can be combined to automatically turn off specific circuits based on your priority and objectives, such as lowering peak charges by load shedding, load shifting to off peak rate periods and lowering overall charges by reducing consumption during high rate periods.

Smart Circuits are unique combination devices - both meters and switches. Typically, metering requires a stand alone device – requiring yet another, separate device for load switching. Smart Circuits combine these functions into one device – allowing you to switch loads intelligently based on real time data and rules based automatic switching.

Applications

Electricians can now install entry level Energy Management Systems (EMS) for their customers, greatly expanding their market opportunity.

ESCOs Finally an EMS system that starts at \$159 for a single 20 A circuit, and is scalable to 100's of circuits! Previously, the capital outlay requirements for an EMS was \$50,000 minimum, if not much higher.

Farming has become increasingly power intensive. Electronics, pumps, heating and irrigation systems are now commonplace. Although these devices sometimes cycle only a small portion of the day, the peak usage and cost can be high if they happen to turn on at the same time.

Facility Managers Intense budget pressure to reduce utility costs, and stress from pending rolling blackouts that wreck havoc on sensitive equipment make the facility manager's job even more difficult. A SC can quickly and economically reduce a facility peak charge.

Auditors / Inspectors Smart Circuits provide permanent remote access to data 24/7. This provides for an on-going client relationship, enabling you to provide monthly or quarterly reports on progress well into the future.

IT Smart Circuits installed at the rack level, records line quality with time stamped records of dips, surges, and interruptions.

Landlords Smart Circuits provide permanent reporting of tenant usage and cost. Regardless if it is tenant or landlord paid utilities, Smart Circuits educate tenants of their usage and reduce controversy over utilities.

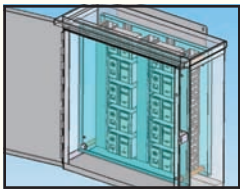
Manufacturers Companies that produce energy efficient devices utilize Smart Circuits (and Watts up? meters) in the design area and sales department. Smart Circuits provide permanent real-world usage data from the field. Because the data is provided over the internet, remote access without interrupting or involving the end user is possible.

Restaurants For a minimal investment, even small restaurants can significantly reduce their peak charge.

Service Repair Field diagnostics frequently incorporate power and voltage measurements. Motors have clear power profiles and problems can be easily identified.

Utilities With high resistance to new power plants, utilities must implement conservation programs aggressively. Utilities in virtually all 50 states are using Smart Circuits and Watts up? meters in a variety of programs to directly reduce consumption, educate their customer base on leakers, phantom loads, space heaters, and other energy hogs.

DOE materials specify Watts up? for refrigerator replacement programs. The cord is convenient and avoids retests that are needed when meters that plug directly into the outlet fall out. Peak readings for both current and wattage are displayed, but the duty cycle display even more definitively shows compressor run time.



The Smart 20 amp pre-wired enclosure with 10 units

SMART CIRCUIT 20 AMP

You control your energy savings based upon rules – that you create.

Remote access via web browser, TCP/IP and HTTP connection

Reduce costs Effective when your utility has TOU (time of use) rates, where they charge a higher rate during peak times. Smart Circuits can automatically "load shift" so loads are used during off peak times.

Reduce peak charges Commercial accounts are charged a "peak charge", which is based on the maximum amount of kilowatts used during the month, even if it was only for half an hour. Lowering your peak usage directly lowers your monthly bill. Smart Circuits can automatically "shed loads" to keep your peak usage under a threshold. For example, connect 25 Smart Circuits to your account, and configure our website to automatically turn off specific loads when the total power across all 25 Smart Circuits exceeds a threshold you designate.

Lower consumption Many utilities now have tiered pricing rates, where higher usage is billed at a higher rate. This often happens toward the end of a billing cycle, which might be daily, weekly or monthly based. Smart Circuits keep track of total consumption and can automatically turn off non-critical loads once the high rate tier is activated.

Manual on/off For security reasons, rebooting servers, or while on vacation.

Perfect for Customers in states qualifying for utility rebates, small/medium size businesses, Consumers, Anyone billed demand charges or TOU (time of use) rates, Energy Management System installers, Energy Efficiency Companies, Auditors, Electricians, Facility Managers, Commercial real estate owners, Building Automation, Home Automation (Crestron, Control 4, and AMX installers).

**** Payback Example** Commercial customers (also residential customers in some jurisdictions) are often charged a "Demand charge", which is a fee charged for the maximum 15 minute kilowatt demand used during the month. In Denver, this charge is \$8.40 per kilowatt. So for example, if the maximum kw a customer used during the month was 38kw, then they would see a charge of \$320 on their bill. To achieve a payback within 2 years, the Smart Circuit 20 would turn off a 1 kw load during this peak time(s) during the month, reducing the peak from 38kw to 37kw. The Smart Circuit 20 would turn the load back on during off peak times. This is all configurable by the customer. This 1 kw reduction would save the customer \$8.40 per month. If this happened 20 months over a two year period, then the entire cost of the Smart Circuit would be paid for in less than two years. Since the Smart Circuit 20 can switch almost 5 kw (20 amps at 240 volts), it could produce much higher savings up to \$40 per month per Smart Circuit, and potentially provide a payback in less than 1 year.

Specifications

100-250v, 50/60Hz, 20 amps

+/- 1.5%, + 3 counts of the displayed value

Below 60 watts, amps and power factor lose accuracy but accuracy for watts and the other parameters is maintained

Ethernet connection includes communication via TCP/IP, and http.

Power switching rated at 100,000 cycles and is normally on USB and ethernet interface

Mains supply voltage fluctuations not to exceed +/- 10% of the nominal voltage

Input and output is via wire terminal block

Must be mounted inside an enclosure

Dimensions: 3" x 2" x 2" (8cm x 5cm x 5cm)

Weight: .5 lbs (0.25 kg)

Smart Circuit 20 is NOT currently UL listed. UL certification is anticipated for the end of 2009

Embedded web server

Controls entire circuits or specific end loads

Access data in real time and via download from browser

Switch loads off manually or by user configurable rules

USB port for direct access from PC

True power, to 0.1 watt resolution

Cumulative power and power factor

Peak and minimum values of voltage, current, wattage

Peak readings capture surges

RMS voltage and current

For permanent applications installed in an sub-panel enclosure or double gang box

