SMART™ Integrated Meters

INNOVATIVE SUBMETERING

In the face of rising energy costs and new mandates, submetering resource-consuming systems is becoming increasingly important and impactful on the bottom line; however, the cost associated with implementing a traditional submetering strategy can be a large barrier for organizations. Powersmiths has overcome this challenge by integrating revenue grade CT's and metering into the secondary of the transformer at the time of manufacture. This innovation removes many of the costs and complexities associated with implementing a submetering strategy such as wall space allocation, electrical wiring and conduit installation, meter component integration, safety approval, and follow-up system commissioning.

SMART-R3A model shown on 75kVA E-Saver 2016™

APPLICATIONS

- Benchmark, trend and analyze power and energy
- Support ongoing commissioning and verification for high performance building certifications and frameworks such as Net Zero, deep energy retrofits and LEED®
- Validate and enhance energy conservation measures
- Support education for sustainability programs
- Streamline the data collection and analysis process through remote browser-based access
- Understand capacity utilization and identify cost avoidance opportunities through load profiling
- Correlate thermal imaging and other preventative maintenance findings to loading
- Enable data collection in facilities that restrict access to live transformers

INTEGRATION DURING MANUFACTURING

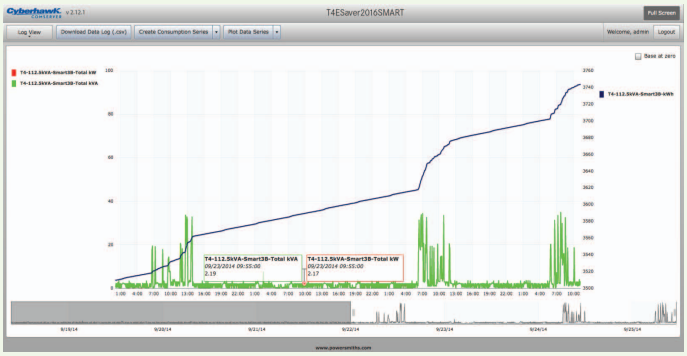
All integration of SMART is done at the time of transformer manufacture. This simplifies the onsite installation process and greatly reduces overall cost. Before shipment, each meter is commissioned to ensure accurate install and proper configuration to support safe and reliable data collection.

MODELS

SMART-1 is an external measurement port with simple twist-lock connections for the Cyberhawk EP-300 Portable™ meter. SMART-1 provides simultaneous access to transformer primary and secondary voltage and currents, which enables the EP-300 to measure efficiency, energy and power quality, coil temperatures and internal surge protection status (when supplied). Adapters are available to connect third party meters.

SMART-R2 is an energy and power meter that measures the transformer secondary (load profile). Data may be viewed via the local display or read by third party systems over RS-485 using Modbus RTU. The SMART-R2B model includes an external measurement port for connecting Cyberhawk EP-300.

SMART-R3 includes the functionality of SMART-R2 plus a web-server that provides a highly interactive browser-based user interface to access real-time data logs and trend graphs, enables third party systems to read data over an Ethernet based network connection using Modbus TCP or optional BACnet/IP, and supports data push to Powersmiths WOW™ Sustainability Management Platform. Trend logs stored on the web-server can be downloaded via the network or a computer directly connected to the meter allowing for further analysis. The SMART-R3B model includes an external measurement port for connecting Cyberhawk EP-300.



kWh, kW and kVA trend logs viewed via a standard web browser from SMART-R3

KEY FEATURES

- Alternative low-cost approach to submetering
- Simplify on-going commissioning of the transformer and building systems fed
- Identify cost avoidance opportunities through load profiling
- Eliminate the safety and disruption risks inherent in opening live transformers to acquire energy and power data
- Integrated and commissioned at the time of transformer manufacture to save substantial field time and cost
- Web-server option for browser-based remote access to live data and trend logs, network connection to a building management system, and data push to Powersmiths WOW™

TECHNICAL INFORMATION

Meter Features: *(SMART-R2, R3 models)*

- Comprehensive electrical parameters of the load including power and energy
- Power quality (voltage and current THD and power factor)
- Simultaneous display of five parameters
- Data collected can be read by third party systems
- Built-in support for Powersmiths WOW™ Sustainability Management Platform

External Measurement Port Features: *(SMART-1, R2B, R3B models)*
(For use with Cyberhawk EP-300 Portable™)

- Safe access to live voltages and currents without opening the transformer enclosure
- Measurement of transformer primary and secondary parameters
- Measurement of real world transformer efficiency and performance
- Check transformer coil temperatures and internal surge protection device (when supplied)
- Simple twist-lock connection for ease-of-use

PASSWORD PROTECTED ACCESS

All meter setup, configuration and access to data is password protected and can be set locally at the integrated display or remotely using the available software installed on a PC platform.

POWERSMITHS WOW™ CERTIFIED

SMART-R3 has been tested and certified to be compatible for data push to the cloud-based Powersmiths WOW™ Sustainability Management Platform to support education, analytics and GHG reporting.

ORDERING INFORMATION

	Models						
	SMART-1	SMART-R2A	SMART-R2B	SMART-R3A-EM	SMART-R3A-EB	SMART-R3B-EM	SMART-R3B-EB
External Port	✓		✓			✓	✓
Meter		✓	✓	✓	✓	✓	✓
Local Display		✓	✓	✓	✓	✓	✓
RS-485		✓	✓	✓	✓	✓	✓
Modbus RTU		✓	✓	✓	✓	✓	✓
Web-server				✓	✓	✓	✓
Modbus TCP				✓	✓	✓	✓
Ethernet				✓	✓	✓	✓
Web Accessible				✓	✓	✓	✓
Trend Logs				✓	✓	✓	✓
WOW Push				✓	✓	✓	✓
BACnet/IP					✓		✓

SYSTEM RATINGS:
Voltages: Matched to transformer voltage
Power: Internally self-powered
Burden: < 5 - 10W (model dependent)

METER PORT CONFIGURATIONS:
Configurations: Match transformer configuration

CT INPUTS:
CT Ratio: Integrated (transformer dependent)
CT Accuracy: Class 0.3

MEASUREMENTS & ACCURACIES: (SMART-R2 and R3 models)
V & I: L-N, L-L, effective (0.2%)
Powers (P,Q,S): L1, L2, L3, Total (0.5%)
Demands: Powers and Currents (0.5%)
Power Quality: PF (0.5%), THD (V,I) and harmonics (1%)
Energy: Imported, Exported, Total, Net (Class 0.5)
Min/Max Registers: V, I, PF, P, Q, S, THD
Sampling Rate: 64/cycle

PROTECTION & CONNECTIONS:
Fused disconnects, Shorting CT terminal blocks

PHYSICAL:
Size: 6"H x 18.5W x 9"D; 10lbs weight
Mounting: Top of transformer enclosure
Enclosure: NEMA 1 (N3R optional)
Temperature: -20°C to +40°C

COMMUNICATION INTERFACES:
RS-485: 2-wire to 38.4kB
Ethernet: 10/100 BaseT (SMART-R3 models)
IP Addressing: Static or DHCP client (SMART-R3 models)

COMMUNICATION PROTOCOLS:
Modbus RTU
Modbus TCP (SMART-R3 models)
BACnet/IP (SMART-R3-EB models)
TCP/IP, HTTP (SMART-R3 models)
WOW XML Push (SMART-R3 models)

USER INTERFACES:
Browser based access via IP (Requires Adobe® Flash® plugin, SMART-R3 models)
Setup: Software (Windows XP or later) or local display
Access Restriction: 2-level password
Display: 1 per meter port, 5-line LED backlit LCD, 4-button user controls

WEB-SERVER TREND LOGS: (SMART-R3 models)
Parameters: Up to 200
Log Intervals: 1 - 60 min
Typical Log Period: 40 days for 6 parameters logged at 15 min
Unlimited remote logging available when connected to Powersmiths WOW™

PRODUCT CERTIFICATIONS:
Meter module to UL/cUL Listed to Category PICQ (UL61010-1)
Certified compatible for data push to Powersmiths WOW™

WARRANTY:
5 year limited

MANUFACTURER'S STANDARDS COMPLIANCE:
ISO 9001, Quality Management System
ISO 14001, Environmental Management System
ISO 17025, CSA Certified Efficiency Test Lab

In addition to the SMART meter family, Powersmiths offers the Express Logger™ for applications requiring extended logging without an internet connection. Ask your local representative or see the Express Logger product sheet for more information.

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