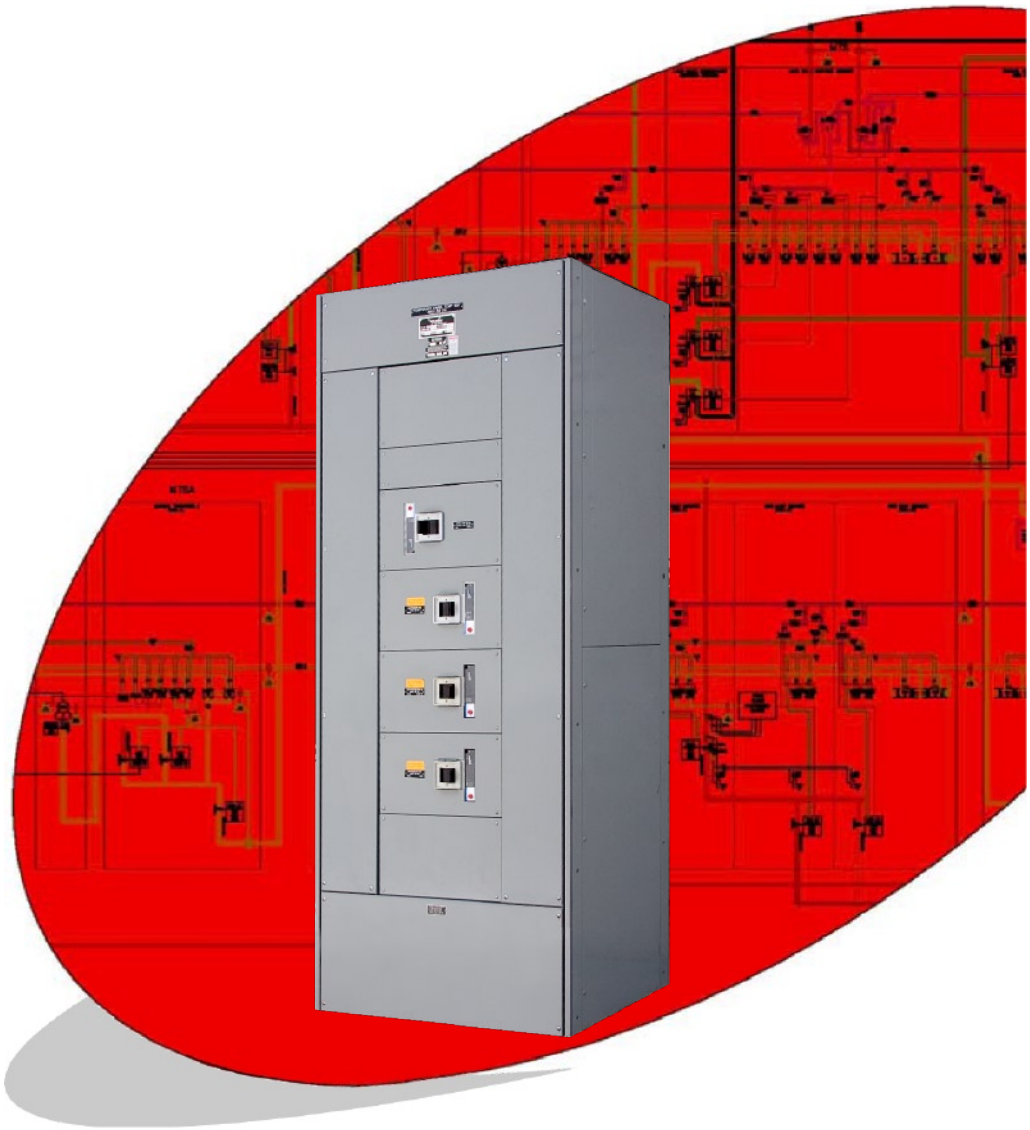
BENJAMIN - **P**ower **M**etered **S**witchboard

Line-Side Power Metering on all Breakers

An *effective metering solution* for your Energy Management Systems



Since 1911

W. A. Benjamin Electric Company
Manufacturers of Quality Electrical Power Distribution Equipment

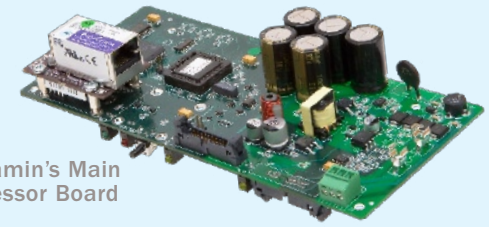
POWER METERED SWITCHBOARD (PMS)

Embedded Revenue Grade Metering

The Benjamin PMS provides a cost-effective and innovative approach to circuit breaker metering. Power parameters such as voltage, current, power, and energy consumption are measured on all branch circuits plus mains. The information can be accessed over the network through a variety of protocols. Data updates are available every second to provide proactive information, such as user-configured low and high threshold alarms for any circuit. The Benjamin PMS is ideal for new or existing applications and is an essential step towards development of your energy management program.

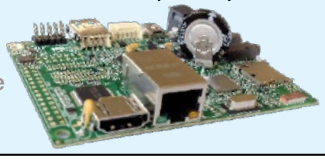
Product Features

1 Embedded Data Processing - All Power Circuit Data is provided by our Master Processor, which makes the data available via standard memory mappings or through the embedded webserver. New data values are available at 1 second intervals.



Benjamin's Main Processor Board

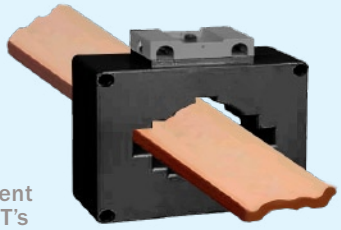
2 Embedded Webserver - This single board computer utilizes a LINUX operating system and provides a "Power Metering Interface" (PMI) accessed using a standard web browser. Additionally, metered data values are archived locally at 1 minute intervals with up to 2 years of storage.



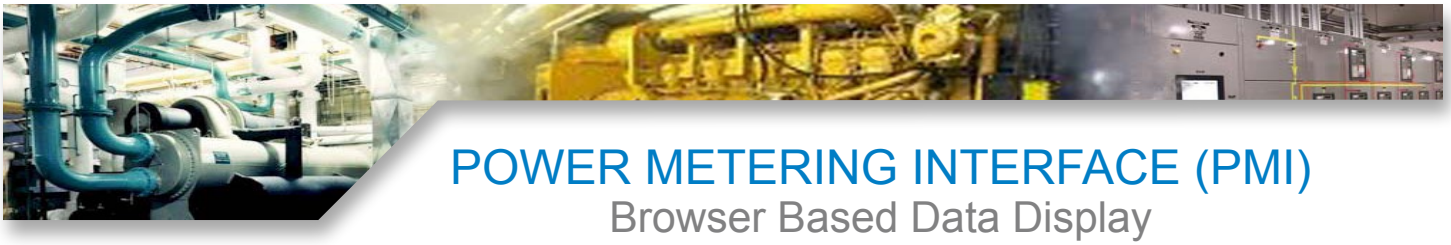
ARM-based Single Board Computer

3 Flexible Communications - Connectivity to the real-time and archived data is made through standard industry communication protocols such as; BACnet/IP, Modbus TCP/IP, Modbus Serial, and XML-RPC.

4 Line-Side CT's - Power metering is provided by highly accurate CT's positioned on the line-side of the circuit bussing. This unique construction assures ease of breaker repair/upgrade and installation of the load wires.



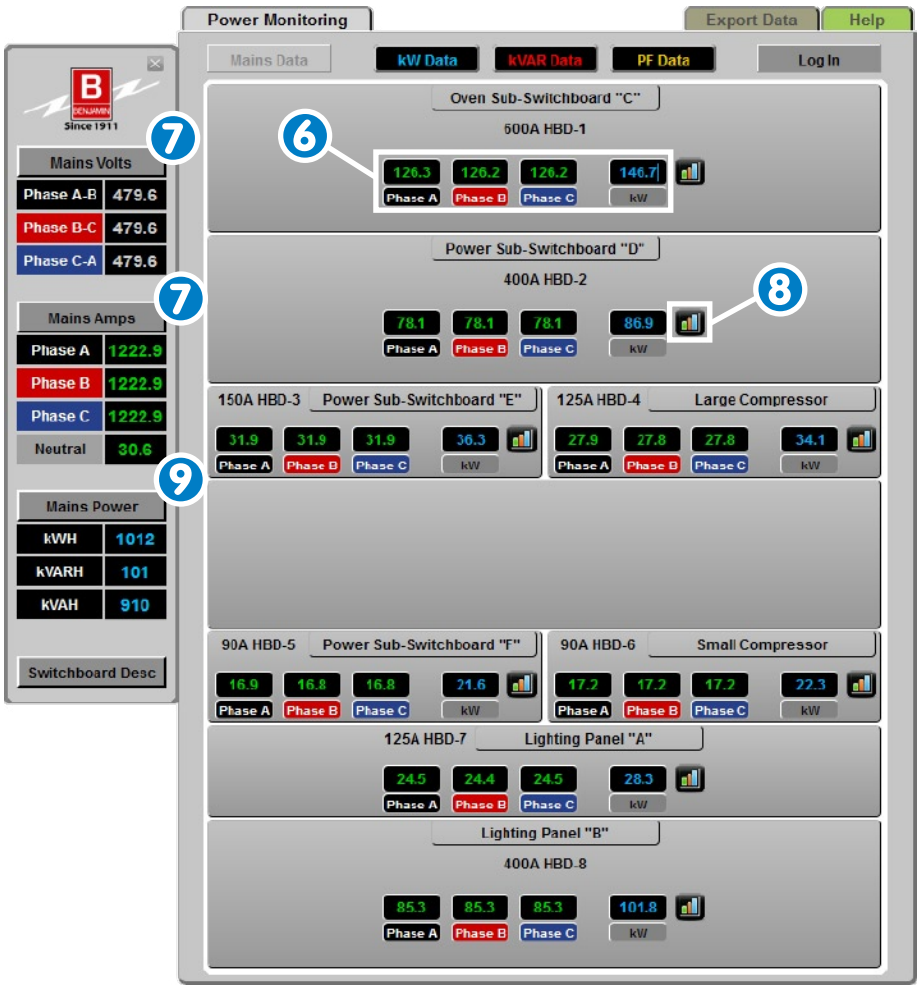
Instrument Grade CT's



POWER METERING INTERFACE (PMI)

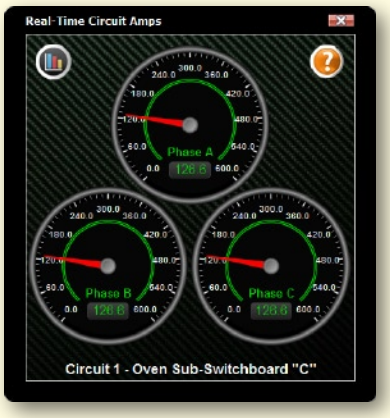
Browser Based Data Display

The Benjamin PMI is used to display the measured power of all circuits using a standard web browser, accessible over the local network or the internet. Software installation is not required and no license fees are applicable. The PMI also provides local storage of metered values at one minute intervals, with up to two years of data storage. Users with authorized access can configure various operational parameters of the switchboard including circuit descriptions and a location designation for the connected load. This interface is included as a standard component of the Benjamin Metering system.



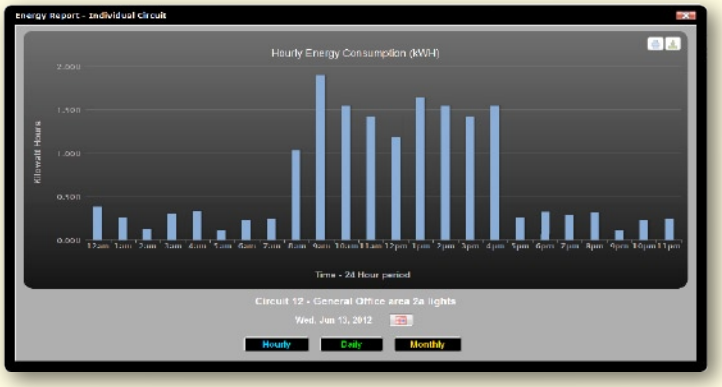
Product Features

6 Circuit Data - Click point areas of the PMI provide detail of power parameters such as this analog and digital presentation of real-time current consumption for all three phases of the circuit.



7 Mains Monitoring - Power parameters of the power-feed is presented digitally for all three phases of Volts and Amps. This data can also be viewed in a real-time line graph.

8 Archived Data Historical metering data for a specific circuit is presented in a bar graph format. In this example, the Energy Consumption for this circuit is displayed over a 24 hour time period in 1 hour increments.



9 Switchboard Energy - The energy flow through the switchboard is continuously measured and accumulated. Other power system parameters such as Amps, Volts, VAR's, and Power Factor are available in a real-time digital presentation and in archived graphical form.

BENJAMIN Power Metered Switchboard
Specifications

Voltage Ratings	120/240V 1Ø 3W	120/240V 3Ø 4W	208Y/120V 3Ø 4W
	240V 3Ø 3W	480Y/277V 3Ø 4W	480V 3Ø 3W

AIC Ratings	10kAIC to 200kAIC @240V
	14kAIC@480Y/277V to 100kAIC@480V

Power Measurement	**Mains Current Accuracy:**	2% of reading from 1-10% of nominal rated current 1% of reading from 10-100% of nominal rated current
	Mains Voltage Accuracy:	0.2% of reading from 90 - 600 VAC Line to Neutral
	Mains Power Data:	Voltage, Current, Hz, W, VAR, VA, PF, WHrs, VARHrs, VAHrs
	Branch Current Accuracy: (up to 400A nominal circuits)	1% of reading from 0.15A - 0.25A 0.5% of reading from 0.25A - 400A
	Branch Current Accuracy: (> 400A nominal circuits)	2% of reading from 1% - 10% of nominal rated current 1% of reading from 10% - 100% of nominal rated current
	Branch Circuit Data:	Voltage, Current, W, VAR, VA, PF, Whrs, VARHrs, VAHrs
	Harmonic Analysis:	Fundamental through 40th harmonic: Voltage, Current, Real Power
	Data Update Rate:	1 second for all real-time values

Mains Configurations	**Main Lugs Only:**	100 Amp to 3,000 Amp
	Main Breaker:	100 Amp to 2,500 Amp

Branch Circuit Breaker Options	**1 Pole**	15 Amp to 150 Amp
	2 Pole	15 Amp to 600 Amp
	3 Pole	15 Amp to 2,500 Amp

Communication Protocols	Modbus TCP/IP	Modbus ASCII	Modbus RTU	XML-RPC
	BACnet/IP	EtherNet/IP		

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