

## Commercial Energy Consumption Meter



### DESCRIPTION

The **H8160 Series** energy meter is easy to install, provides exceptional systems accuracy, and ensures data integrity with its Palm interface, making it ideal for all submetering applications.

Installing the energy meter is simple: just mount the meter, connect the neutral if used, and the three color coded voltage leads to the power conductors of the electrical service, and match the CTs (e.g., red voltage lead and red CT must be on the same conductor). Since the meter automatically detects and compensates for phase reversal, the concern of CT load orientation is eliminated and installation time is greatly reduced.

To provide excellent system accuracies of 1% from 2% to 100% of the rating of the CTs (e.g. 2-100 amps with 100 amp CTs), each meter is matched with quick to install split-core CTs and the meter/CTs are system calibrated.

When used in stand-alone metering applications, readings from the meter can be downloaded to a Palm® organizer using Infrared communications, as well as displayed on the meter front. The Palm® organizer interface to the meter provides a fast, simple solution for accurately acquiring tenant energy usage data.

The energy information stored in the Palm® organizer can then be downloaded to a PC through the Palm Hot Sync® Cradle and stored to a PC file.

### Applications

- Commercial tenant submetering
- Performance contracting
- Cost allocation
- Real time power monitoring via local display or through control/data acquisition systems

### The Ultimate Stand-alone Energy Metering System

- High resolution backlit LCD display provides clear readings from a distance and under any lighting conditions...reduces the risk of misinterpreting the data...back lighting can be disabled if desired
- Palm organizer interface ensures accurate data collection...reduces the likelihood of energy allocation disputes

### Easy Integration to Control or Data Acquisition Systems

- Pulse output from 1/10 to 1 pulse per kWh provides easy connection to existing control systems
- Phase loss alarm...protects equipment
- With the optional communications board the energy meter can be easily added to a Modbus control systems network and report multiple variables including kW, kWh, kVAR, PF, Amps, and Volts, providing crucial power information at a much reduced installation cost

### Simple, Fast Installation

- Split-core CTs eliminate the need to remove electrical conductors, greatly reducing installation time
- Meter automatically detects and corrects for phase reversal eliminating the need to be concerned with CT load orientation
- CTs and voltage leads are color coded making it easy to determine matching, e.g., the red CT and red voltage lead must be installed on the same conductor(s)
- Safe low voltage output CTs eliminate the need for shorting bars

### Best System Accuracy Ever

- ±1% systems accuracy from 2% to 100% of the CT rating meets ANSI C12.1 metering accuracy standards

## GENERAL SPECIFICATIONS

**LCD display** ..... 1.2 x 3.8" viewing area, 160 segments, back lit with green LEDs  
**Electrical services** ..... 100-300 VAC 1Ø/200-480 VAC 3Ø Y plus neutral  
**CT case isolation** ..... 600 VAC  
**Sample rate** ..... 1280 Hz.  
**Internal isolation** ..... 2500 VAC  
**Operating temp. range** ..... 0 to 50°C (<95%RH, non-condensing)  
**Storage temp. range** ..... -40°C to 70°C  
**Systems accuracy** ..... ±1% of reading from 2% to 100% of the rated current of the CTs...accomplished by matching the CTs with a meter and calibrating them as a system  
**Power source** ..... 100-300 VAC (line-to-neutral) 50 VA  
**Voltage tolerance** ..... +10/-25% (90 - 132VAC line-to-neutral)  
**Services** ..... Any service where the A-N voltage is 300VAC nominal, and the phase-to-phase voltage is less than 480VAC  
**Frequency** ..... 50/60 Hz.  
**Pulse output** ..... N.O., Opto-FET, 100mA @ 24VAC/DC  
**Pulse rate** ..... 0.10, 0.25, 0.50, or 1.00 kWh per pulse  
**Pulse width** ..... 200msec closed  
**Phase loss alarm output** .. N.C., Opto-FET, 100mA @ 24VAC/DC. Fixed threshold 25% below any other phase Always open as long as alarm persists

## COMMS BOARD OPTION

### Modbus Communications

**Output type** ..... Modbus RTU  
**Connection** ..... 2-wire or 4-wire selectable  
**Baud rate** ..... 2400, 4800, 9600, 19200 baud  
**Parity** ..... None/Odd/Even Selectable  
**Address** ..... 1-63

### Inputs

**Demand Reset** ..... Starts a new demand interval. Pulled-up to +5V via 4.7k. Contact closure or pull-to-ground. Edge-triggered

## DATA OUTPUT (requires a COMM Board)

..... kWh, Consumption  
 kW, Demand  
 kVAR, Reactive power  
 kVA, Apparent power  
 Power factor  
 Average demand  
 Minimum demand  
 Maximum demand  
 Voltage, line to line  
 Voltage, line to neutral  
 Amps, Average current  
 kW, Demand ØA  
 kW, Demand ØB  
 kW, Demand ØC  
 Power factor ØA  
 Power factor ØB  
 Power factor ØC  
 Voltage, ØA to ØB  
 Voltage, ØB to ØC  
 Voltage, ØA to ØC  
 Voltage, ØA to Neutral  
 Voltage, ØB to Neutral  
 Voltage, ØC to Neutral  
 Amps, Current ØA  
 Amps, Current ØB  
 Amps, Current ØC

## IR INTERFACE REQUIREMENTS

**PC Download Requirements**... WIN 95/98/2000/NT4.0  
 MS-DOS compatible 486 or higher  
 CD-ROM, mouse  
 Palm HotSync Manager  
 (version 2.0 or higher) installed

**Organizer Requirements**..... Palm III or higher  
 with IR communications

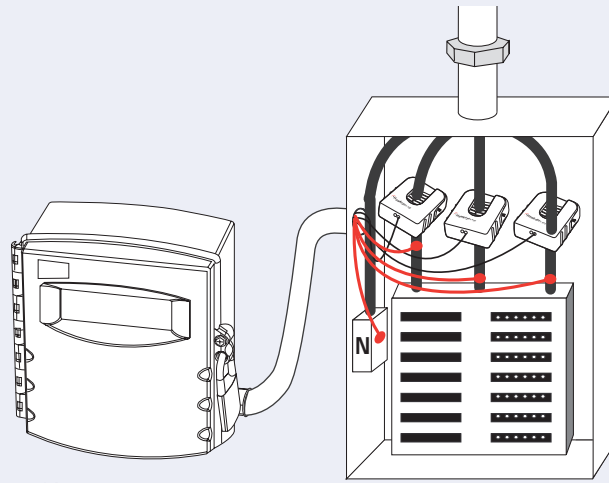
## Ordering INFORMATION

AMPS	ONE CT	TWO CTS	THREE CTS	63
100A Mini	H8163-0100-0-1	H8163-0100-0-2	H8163-0100-0-3	Standard Pulse and Phase Loss Output
200A Small	H8163-0200-1-1	H8163-0200-1-2	H8163-0200-1-3	
800A Med.		H8163-0800-3-2	H8163-0800-3-3	
800A Bus			H8163-0800-4-3	
1600A Bus			H8163-1600-4-3	



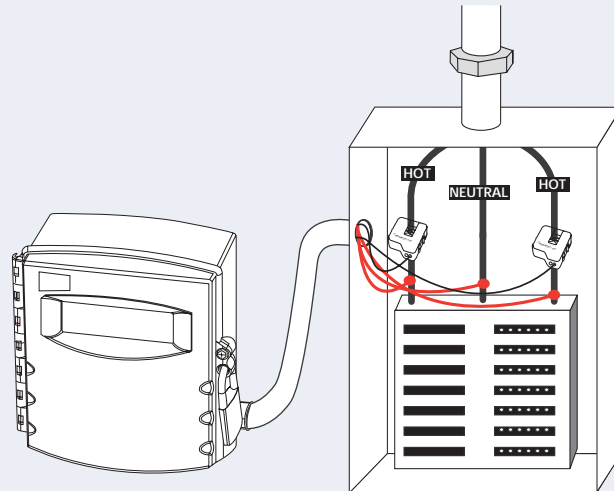
APPLICATIONS/WIRING EXAMPLES:

208/120 VAC, 4-wire, 3Ø, 200 Amp Service



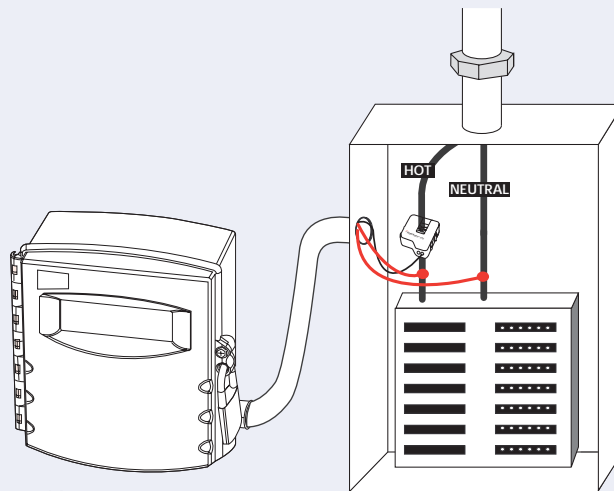
H8063-0200-1-3

240, 3-wire, Single Phase, 100 Amp Service



H8063-0100-0-2

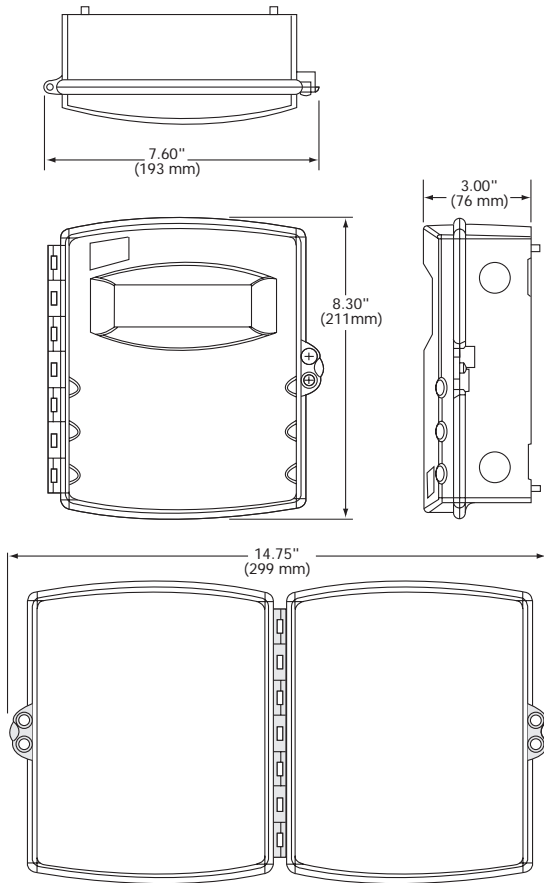
120, 2-wire, Single Phase, 100 Amp Service



H8063-0100-0-1

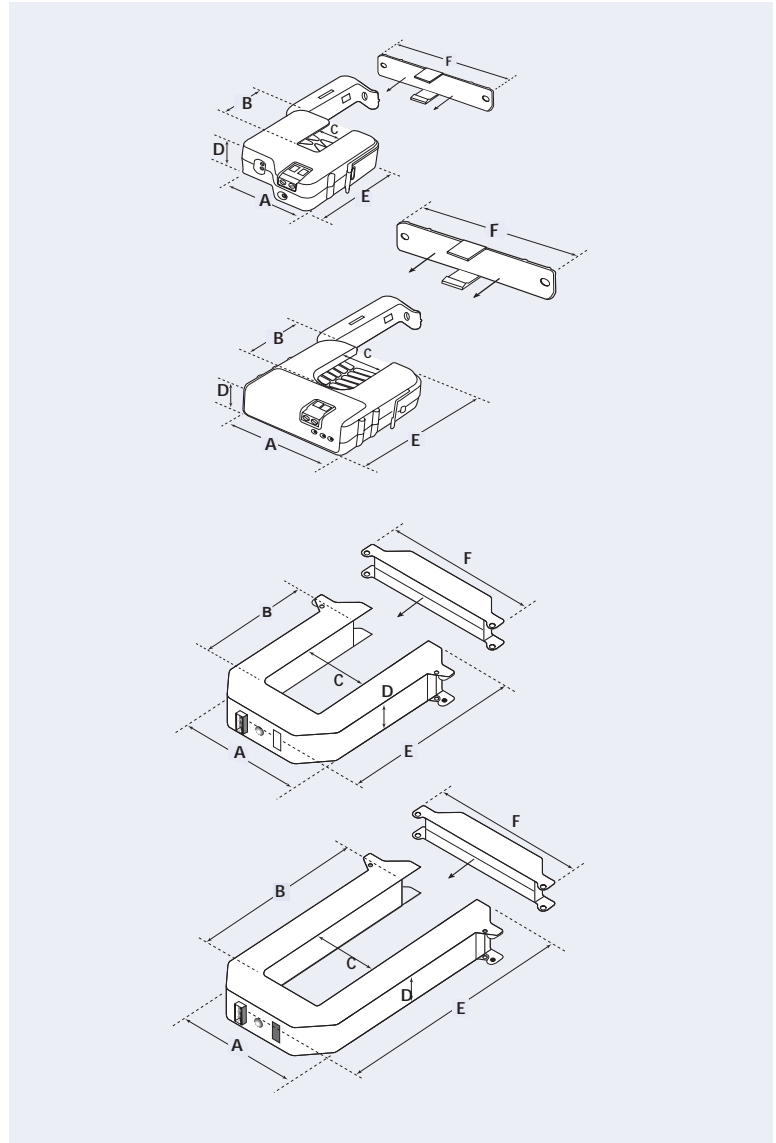
# H8160 SERIES

## DIMENSIONAL DRAWINGS



## CT SIZES

MICRO .....	H8066A
MINI .....	H6809A
MEDIUM .....	H6811A
BUS .....	H6812A



MICRO 100 Amp	MINI 200 Amp	MEDIUM 800 Amp	BUS 1600 Amp
A = 2.15" (55 mm)	A = 2.58" (65 mm)	A = 4.90" (124 mm)	A = 4.90" (124 mm)
B = 1.28" (33 mm)	B = 1.90" (48 mm)	B = 2.89" (73 mm)	B = 5.50" (140 mm)
C = .518" (13 mm)	C = .90" (23 mm)	C = 2.45" (62 mm)	C = 2.45" (62 mm)
D = .915" (23 mm)	D = 1.04" (26 mm)	D = 1.13" (29 mm)	D = 1.13" (29 mm)
E = 2.34" (60 mm)	E = 2.90" (74 mm)	E = 5.57" (141 mm)	E = 8.13" (207 mm)
F = 3.52" (90 mm)	F = 3.52" (90 mm)	F = 5.91" (150 mm)	F = 5.92" (150 mm)

POWER MONITORING