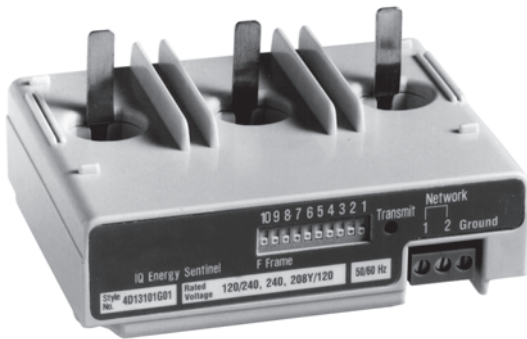


IQ Sentinel



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**IQ Energy Sentinel™ and IQ Power Sentinel**

**Product Description**

**IQ Sentinels**

IQ Sentinels are microprocessor-based submeters, designed to monitor power, energy, currents, voltages, power factor, frequency, apparent power and reactive power. They represent an alternative to installing separate wattmeters, watthour meters, watt demand meters, ammeters, voltmeters and more.

IQ Sentinels are available with two different capabilities:

- The Energy Sentinel version that monitors watts, watthour and watt demand
- The Power Sentinel version that monitors watts, watthour, watt demand, currents, voltages, power factor, frequency, apparent power and reactive power

Key advantages include unmatched savings in space, lower installation costs and the capability to communicate data readings in a variety of ways.

IQ Sentinels with built-in CTs and communications have the added benefit of greater overall system accuracy. Conventional metering often is less accurate since external CTs and separate transducers may each have inaccuracies of 1% or more.

Eaton’s IQ Sentinels provide a unique cost-effective method to implement energy submetering at lower levels in the distribution system.

The ability to monitor power distribution systems down to the machine or process level at an industrial facility has become essential to provide key benefits such as to verify the accuracy of the utility bill, identify and track energy usage to the loads that consume it, develop a facility energy profile to establish a baseline, allocate energy costs to create accountability, etc.

An optional door-mounted interface, the Subnetwork Master Local Display, is available to display the energy parameters monitored by the IQ Sentinels.

Submetering application examples for the IQ Sentinels include energy demand monitoring, product cost analysis, process machine tool efficiency and productivity improvement, and energy cost allocation or tenant billing for commercial, industrial, recreational and residential facilities.

**Note:** For customer billing applications, consult local utility for metering requirements.

Commercial applications include energy cost allocation within convention halls, office buildings, shopping malls, hospitals, warehouses and storage facilities.

Industrial applications include departmental billing and process/assembly line energy cost analysis. IQ Energy Sentinels may be substituted for watt transducers when monitoring machine tool and equipment performance within plants.

Recreational facilities include sports arenas, camping grounds, trailer parks and marinas.

The IQ Sentinel may be applied on three-phase (three- or four-wire), as well as single-phase (three-wire) systems.

IQ Sentinels may be applied on either 50 or 60 Hz systems.

**Application Description**

The IQ Energy Sentinel is available in three different package versions: breaker mounted, universal breaker with internal CTs, and universal breaker with external CTs.

Designed for mounting on Eaton's Series C® Circuit Breakers utilized in Eaton assemblies such as:

- Pow-R-Line four panelboards—feeder circuits
- Pow-R-Line C™ switchboards—feeder circuits
- Motor control centers and enclosed control with circuit breaker disconnects—starter or feeder circuits
- Enclosed Motor Control
- Enclosed circuit breakers
- Pow-R-Way III® bus plugs with circuit breaker disconnects

**Breaker Mount Applications  
New Equipment****F-Frame Breaker with IQ Sentinel****Retrofitting**

The space-saving design characteristics of the breaker mount IQ Energy Sentinels allow them to be added to existing Eaton circuit breakers at any time, often with no additional space or modifications required.

Or they may be installed when upgrading from older circuit breakers, often with no additional space or modifications required.

**Universal Mount Applications****Universal Mount with Internal CTs**

The universal mount IQ Energy Sentinel with internal CTs includes integral 400A CTs and may be applied on loads up to 400A. The universal mount IQ Energy Sentinels with internal CTs may be utilized wherever breaker mounting is not feasible or possible.

The universal mount IQ Energy Sentinel with provisions for external CTs may be applied on loads up to 4000A. They are usually utilized for monitoring loads larger than 400 amperes, on power cable sizes larger than 500 kcmil or on circuits containing more than one conductor per phase.

**IQ Power Sentinel**

Like the IQ Energy Sentinel, the IQ Power Sentinel is a highly accurate microprocessor-based submeter designed to monitor power and energy. In addition to watts, watt-hour and watt-demand, the IQ power sentinel monitors current, voltage, reactive power (VARs), apparent power (VA), power factor and frequency. The IQ Power Sentinel offers an accurate and economic alternative to separate meters and transducers.

The IQ Power Sentinel is only available in the universal mount with internal CTs up to 400 amperes.

### Features

#### IQ Energy and Power Sentinel Features

##### IQ Energy Sentinel Features

- Monitors (accuracy stated full scale)
  - Kilowatts ±1.0%
  - Kilowatts demand ±1.0%
  - Kilowatt Hour ±1.0%
- Built-in CTs version up to 400 amperes or external CTs version up to 4000 amperes
- Breaker, panel or DIN rail mounted
- Powered directly off the line
- Built-in communication capability
  - Address set by DIP switches
  - Communication at 9600 baud
  - Noise immune INCOM protocol
- Choice of operator interfaces
  - Subnetwork Master Local Display
  - Breaker Interface Module (BIM)
  - Power Management Energy Billing software
  - Power Management Software

##### IQ Power Sentinel Features

- Monitors (accuracy stated full scale)
  - AC line current (each phase) ±0.5%
  - AC line-to-line voltage ±0.5%
  - AC line-to-neutral voltages ±0.5%
  - Watts (each phase and total) ±1.0%
  - VARs (each phase and total) ±1.0%
  - VA (each phase and total) ±1.0%
  - Apparent Power Factor (each phase and total) ±0.5%
  - Displacement Power Factor (each phase and total) ±0.5%
  - Demand (total watts) ±1.0%
  - Frequency ±0.5%
  - Watthours ±1.0%
- Built-in CTs version up to 400 amperes
- Panel or DIN rail mounted
- Powered directly off the line
- Built-in communication capability
  - Address set by DIP switches
  - Communication at 9600 baud
  - Noise immune INCOM protocol
- Choice of operator interfaces
  - Subnetwork Master Local Display
  - Breaker Interface Module
  - Power Management Energy Billing software
  - Power Management Software
- UL and CSA listed
- CE mark

##### IQ Sentinel Benefits

- One device replaces multiple meters and/or transducers
- Improved system accuracy
- Savings in product cost
- Savings in space
- Savings in installation cost
- No external power source is needed
- Permits remote monitoring and interconnection with programmable logic controllers and building management systems. For further information see section on Power Management Software Systems
- Designed to interface directly with Power Management Software Energy Billing software
- Flexibility—displays what is needed where it is needed
- Power Management Software

#### Note

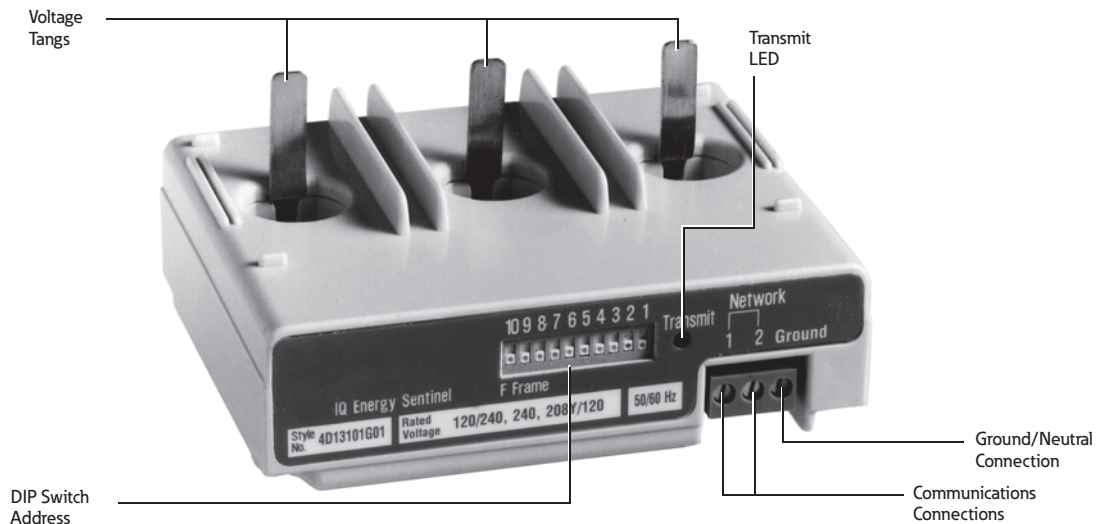
The Power Sentinel is available only in the Universal Mount version with internal CTs.

#### Eaton's Breaker Mount

Eaton's breaker mount IQ Energy Sentinel installs in less than 10 minutes on the load side of an Eaton

F-Frame (150 ampere), J-Frame (250 ampere), or K-Frame (400 ampere) circuit breaker.

**Note:** The Power Sentinel is available only in the Universal Mount version with internal CTs.



Energy Sentinel Features

#### Universal Mount with Internal CTs—(UI)

The Universal Mount IQ Energy Sentinel with internal CTs may be panel-mounted or DIN rail mounted on disconnects or other circuits up to 400 amperes. A pull-apart terminal block is provided on the device for connection of the system voltage reference wiring.

**Note: Only the Universal Mount with Internal CTs is available in both IQ Power Sentinel and IQ Energy Sentinel versions.** The location of the ground/neutral connection differs on Breaker Mount IQ Energy Sentinels from the location of the ground/neutral connection on Universal Mount IQ Sentinels. Incorrect wiring to the ground/neutral and communications connections may result in accuracy and communication errors.

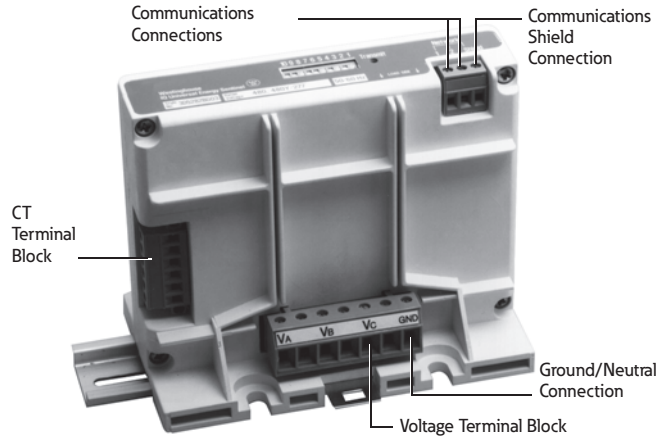
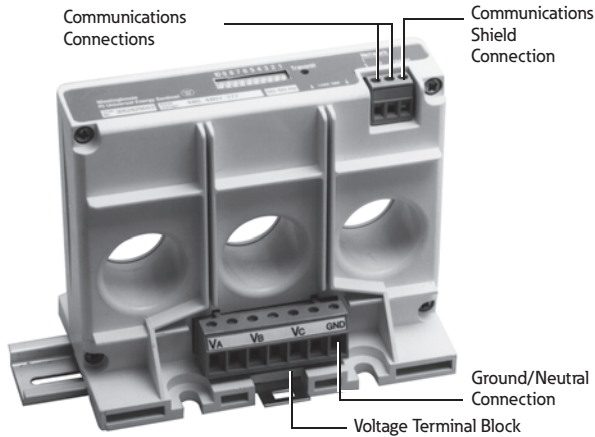
#### Universal Mount for External CTs—(UE)

The Universal Mount IQ Energy Sentinel for external CTs may be panel-mounted or DIN rail mounted on circuits up to 4000 amperes.

A pull-apart terminal block is provided on the device for connection of the system voltage reference wiring as

well as another terminal block for connection to the user's existing 5-ampere secondary CTs that may range in standard ratios from 25:5 up to 4000:5.

**Note:** If the device will be disconnected without interruption of the monitored load, the use of a CT shorting block is advised.



*Energy and Power Sentinel Features*

#### Standards and Certifications

##### Energy Sentinel

- UL listed, File E64983
- CSA approved, File LR106359-1

##### Power Sentinel

- UL listed, File E185559
- CSA listed
- CE Mark



Product Selection

**IQ Energy Sentinels**

**IQ Energy Sentinels**



Description	Voltage Rating—Vac	Current Rating Maximum Amperes	Catalog Number
For F-Frame breakers	120/240, 240, 208Y/120	150	IQESF208
For F-Frame breakers	220/380, 230/400, 240/415	150	IQESF400
For F-Frame breakers	480, 480Y/277	150	IQESF480
For F-Frame breakers	600, 600Y/347	150	IQESF600
For J-Frame breakers	120/240, 240, 208Y/120	250	IQESJ208
For J-Frame breakers	220/380, 230/400, 240/415	250	IQESJ400
For J-Frame breakers	480, 480Y/277	250	IQESJ480
For J-Frame breakers	600, 600Y/347	250	IQESJ600
For K-Frame breakers	120/240, 240, 208Y/120	400	IQESK208
For K-Frame breakers	220/380, 230/400, 240/415	400	IQESK400
For K-Frame breakers	480, 480Y/277	400	IQESK480
For K-Frame breakers	600, 600Y/347	400	IQESK600
Universal with internal CTs	120/240, 240, 208Y/120	400	IQESUI208
Universal with internal CTs	220/380, 230/400, 240/415	400	IQESUI400
Universal with internal CTs	480, 480Y/277	400	IQESUI480
Universal with internal CTs	600, 600Y/347	400	IQESUI600
Universal for external CTs	120/240, 240, 208Y/120	4000	IQESUE208
Universal for external CTs	220/380, 230/400, 240/415	4000	IQESUE400
Universal for external CTs	480, 480Y/277	4000	IQESUE480
Universal for external CTs	600, 600Y/347	4000	IQESUE600

**IQ Power Sentinels**

**IQ Power Sentinels**



Description	Voltage Rating—Vac	Current Rating Maximum Amperes	Catalog Number
Universal with internal CTs	120/240, 240, 208Y/120	400	IQPSUI208
Universal with internal CTs	220/380, 230/400, 240/415	400	IQPSUI400
Universal with internal CTs	480, 480Y/277	400	IQPSUI480
Universal with internal CTs	600, 600Y/347	400	IQPSUI600