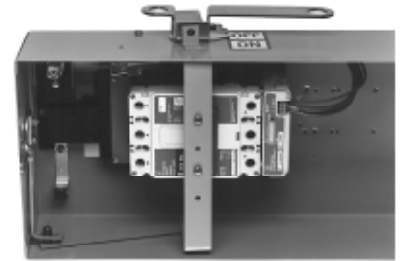




IQ ENERGY SENTINEL FOR BUS PLUGS

The IQ Energy Sentinel was designed as part of the Cutler-Hammer Integrated Monitoring Protection and Control Communications System (IMPACC) and is a highly accurate, microprocessor-based submeter which monitors power and energy. It offers a centralized alternative to individually mounted watt meters, watt hour meters, and watt demand meters. Key advantages include unmatched savings in space, lower installation costs, and the capability to communicate data readings in a variety of ways. IQ Energy Sentinels with built in Current Transformers (CTs) and communications have the added benefit of overall system accuracy. The IQ Energy Sentinel mounts on the load side of Cutler-Hammer F, J and K breakers within

the bus-plug enclosure. The IQ Energy Sentinel is also available with a universal mounting which utilizes external CTs and is offered for fusible bus plug applications. Submetering application examples for the IQ Energy Sentinel include energy monitoring and demand management, energy cost analysis/allocation and tenant or inter-departmental billing. To accomplish the communications system, the customer must provide a twisted pair communication cable in half-inch conduit between the IQ Energy Sentinel bus plug and a Cutler-Hammer Central Energy Display or customer computer to display the information. IQ Energy Sentinel bus plugs are available for Pow-R-Way, Pow-R-Way II and Pow-R-Way III busway.



Bus Plug with Energy Sentinel

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CUSTOMER REQUIRED INFORMATION

Originally a Westinghouse Product

1. Style number or shop order number from existing busway nameplate and complete nameplate information.
2. Height and width dimensions of housing from existing busway.
3. Order by Style Number on Suffix Q77.

Originally a Cutler-Hammer Product

1. Leadtime 14-16 weeks; check VISTA for pricing.
2. Order by catalog number on suffix Q73.

FURTHER INFORMATION

Literature Number	Description
AD 30-560	Application Data for Pow-R-Way
AD 30-561	Application Data for Pow-R-Way II

PRICING INFORMATION

VISTA/VISTALINE	Discount Symbols CE3 and CE4
Contact your local Cutler-Hammer Field Sales Office.	

NOTE: Additional information may be required for manufacturing.



METERING	<input type="checkbox"/> IQ Data Plus II <input type="checkbox"/> IQ Data Plus II HV <input type="checkbox"/> IQ Energy Sentinel <input type="checkbox"/> IQ Generator <input type="checkbox"/> IQ Data
PROTECTION	<input type="checkbox"/> Digitrip MV Trip Units <input type="checkbox"/> Digitrip HV Trip Units <input type="checkbox"/> Universal Trip Units
CONTROL	<input type="checkbox"/> ADVANTAGE Motor Control <input type="checkbox"/> Addressable Relay II
MONITORING	<input type="checkbox"/> Assemblies Electronic Monitor II <input type="checkbox"/> Central Monitoring Unit <input type="checkbox"/> IQ Central Energy Display

IQ devices offer communications capabilities to link electrical distribution equipment to an IMPACC system.



IQ PRODUCTS

Electronic Metering and Motor Protection

PRODUCT DESCRIPTION



The IQ Metering and Protection group of products are multifunctional communicating products based on microprocessor technology. They are designed to replace existing electromechanical devices and can be applied at low, medium, and high voltage points in the electrical distribution system. These devices offer communications capabilities

to link electrical distribution equipment to an Integrated Monitoring Protection and Control Communications (IMPACC) system master.

These products generally surpass capabilities available with older analog/electromechanical technologies. Depending on the features available from each device,

information from these devices may be used to record and analyze power system and power quality events or problems and may improve power systems protection and coordination. With communications, these devices may be used for energy monitoring and management with trended data for use in future power system planning.

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PRODUCT HISTORY

Originally a Westinghouse Product

In the early 1980s, power metering and protective relaying functions were performed by electromechanical devices. Analog meters and induction disk protective relays were found on virtually every switchgear lineup manufactured up to then. With the maturing of solid-state electronics, microprocessor-based replacements for the electromechanical devices became available. These new devices provided increased functionality and flexibility, in a smaller space, for less cost. Westinghouse led the movement towards electronic metering and protection devices with the introduction of the IQ 2000 motor protection and control

relay. In 1987, the IQ 2000 functions were split and two new products were introduced – the IQ 1000 and the IQ Data Plus. The IQ 1000 provided all current monitoring and motor protection functions and was developed for use on AMPGARD and low voltage motor control assemblies. The IQ Data Plus provided complete electrical metering and system voltage protection and was developed for use on low and medium voltage switchgear, as well as AMPGARD and low voltage motor control assemblies.

Since then, the IQ Metering and Protection product family has grown to include

additional products for both metering and protective functions. The IQ Data Plus II, followed by the IQ DP-4000 and the IQ Analyzer provide advanced metering functions including the ability to monitor power quality parameters. IQ Energy Sentinels provide a low cost method to monitor energy usage for individual feeders or loads.

An enhanced version of the IQ 1000, the IQ 1000 II added increased motor protection capability. The Digitrip MV, introduced in 1993 provides overcurrent protection for distribution feeders.

PRODUCT HISTORY TIMELINE

Page	Product	1980	1985	1990	1995	Present
137	IQ 2000 Model (A)		■			
137	IQ 2000 Model (B)		■			
133	IQ 1000 II			■		
	IQ Data Plus			■		
	AEM			■		
133	IQ 500			■	■	■
134	IQ Data			■	■	■
137	IQ Data Plus II			■	■	■
134	IQ Generator			■	■	■
	AR (Addressable Relay)			■	■	■
	AEM II			■	■	■
	IQ 1000 II			■	■	■
136	AR II (Addressable Relay II)			■	■	■
134	IQES (IQ Energy Sentinel)				■	■
135	Digitrip MV				■	■
	CED				■	■
	CED II				■	■
	(Universal IQ Energy Sentinel)				■	■
135	IQ Analyzer				■	■
135	IQ DP-4000				■	■
	IQ Analyzer 6200					■



GENERAL INFORMATION

Application Overview Chart

	IQ Data	IQ Generator	IQ Energy Sentinel	IQ DP-4000	IQ DP-4100	IQ Analyzer 6000	IQ Analyzer 6200
Power Quality Functions							
% Total Harmonic Distortion (THD)				•	•	•	•
Harmonic Distortion Factors						•	•
Customized Power Quality Events						•	•
Monitoring and Alarm					•	•	•
Waveform Capture						•	•
Waveform Display at Device							•
Sub-cycle Voltage Disturbance							•
Metering							
3-Phase Amps	•	•		•	•	•	•
3-Phase Volts	•	•		•	•	•	•
Frequency		•		•	•	•	•
Watts				•	•	•	•
VARs				•	•	•	•
VAs				•	•	•	•
Power Demand				•	•	•	•
Power Factor				•	•	•	•
Minimum and Maximum Values				•	•	•	•
Event Output Contacts					•	•	•
Energy Monitoring							
Watts			•	•	•	•	•
Watts Demand			•	•	•	•	•
Watthours			•	•	•	•	•
Communications Capability	OPTION	OPTION	YES	OPTION	OPTION	OPTION	OPTION



IQ PRODUCTS

Electronic Relay and Motor Protection

GENERAL INFORMATION			
Application Overview Chart			
	IQ 500	IQ 1000 II	Digitrip 3000/MV
Displayed Values			
3-Phase Amps		●	●
Ground Amps		●	●
Maximum Values		●	●
Trip Status	●	●	●
Amps as a % of FLA		●	
Remaining Starts		●	
% Trip Level		●	
Temperature Readings (RTD)		OPTION	
Run Time		●	
Operation Count		●	
Number of Trips by Type		●	
CT Ratio		●	●
Programmed Settings		●	●
Protection			
3-Phase Overcurrent	●	●	●
3-Phase Instantaneous		●	●
Residual Ground Overcurrent	●		●
Residual Ground Instantaneous			●
Zero Sequence Ground Overcurrent		●	●
Zero Sequence Ground Instantaneous		●	●
Jam Protection	OPTION	●	
Underload Protection	OPTION	●	
Positive/Negative Sequence		●	
Unbalance	OPTION	●	
Phase Reversal		●	
Transition and Feedback		●	
RTD Temperature Inputs		OPTION	
Long Acceleration Input	OPTION		
Zone Selective Interlocking			●
Event Output Contacts	●	●	●
Programmable Settings for Trip Curve	●	●	●
Communications Capability	OPTION	OPTION	OPTION



GENERAL INFORMATION/TECHNOLOGY UPGRADES

IQ Data



The IQ Data provides simultaneous current and voltage metering. In one compact, standard package, this device provides an alternative to individually mounted and wired ammeters, voltmeters, ammeter and voltmeter switches.

Features and Benefits

- Space savings in structure – Replaces ammeter, voltmeter, selector switches and frequency meter (IQ Generator).
- Standardization of design – One door-mounted device.
- Direct voltage input up to 600V – No additional Potential Transformers (PTs) required.
- User friendly – Field settable DIP switches.
- Standard model derives power from separate source 120/240VAC supply.
- Only two style numbers
- No need to stock multiple units for different Current Transformers (CT) and PT ratios.

- Interface capability to computer network for data collection, storage and/or printout via IMPACC.
- Membrane faceplate, designed and tested to perform in a harsh industrial environment (NEMA 3R, 12).
- Retains preset parameters through power failure with use of field settable DIP switches (no batteries).

Description	Catalog Number
Basic Metering	IQDATA
Basic Metering with 3-Phase Power Module	IQDATA3PM

IQ Generator



The IQ Generator provides simultaneous current and voltage metering. In addition, the IQ Generator monitors frequency. This device provides an alternative to individually mounted and wired ammeters, voltmeters, ammeter and voltmeter switches, and frequency meters.

Features and Benefits

- Space savings in structure – Replaces ammeter, voltmeter, selector switches and frequency meter (IQ Generator).
- Standardization of design – One door-mounted device.
- Direct voltage input up to 600V – No additional PTs required.
- User-friendly – Field settable DIP switches.
- Standard model derives power from separate source 120/240VAC supply.
- Only two style numbers
- No need to stock multiple units for different CT and PT ratios.

- Interface capability to computer network for data collection, storage and/or printout via IMPACC.
- Membrane faceplate, designed and tested to perform in a harsh industrial environment (NEMA 3R, 12).
- Retains preset parameters through power failure with use of field settable DIP switches (no batteries).

Description	Catalog Number
Basic Metering	IQGEN
Basic Metering with 3-Phase Power Module	IQGEN3PM

IQ Energy Sentinels



The IQ Energy Sentinel is a highly accurate, microprocessor-based submeter designed to monitor power and energy readings. It represents an alternative to installing separate watt meters, watt-hour meters, and watt demand meters.

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

IQ Energy Sentinels with its built-in CTs and communications has 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.

The IQ Energy Sentinel provides a unique and cost-effective method to implement energy submetering at lower levels in the distribution system economically.

Submetering application examples for the IQ Energy Sentinel include energy monitoring and demand management, product cost analysis, process/machine tool efficiency and productivity improvement. Additional applications include energy cost allocation of tenant billing for commercial, industrial, recreational, and residential facilities.

Retrofitting

The space saving design characteristics of the breaker mount IQ Energy Sentinels allow them to be added to existing Series C Circuit Breakers at any time — often with no additional space or modifications required.

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

The Universal mount IQ Energy Sentinel with internal CTs may be utilized wherever breaker mounting is not feasible or possible.

The Universal mount IQ Energy Sentinel for external CTs may be utilized for monitoring loads larger than 400 amperes or when the use of existing CTs is desired.

Description	Catalog Number
For F-Frame Breakers	*IQESF_ _ _
For J-Frame Breakers	*IQESJ_ _ _
For K-Frame Breakers	*IQESK_ _ _
Universal with Internal CTs	*IQESUI_ _ _
Universal for External CTs	*IQESUE_ _ _

* Final three characters of catalog number are for Voltage Rating
ie. 2 0 8 for 120/240, 240, 208Y/120 Systems