Supercedes TD.17.03.T.E
pages 1-4, dated May 1999

Metering Devices
IQ DP-4000

IQ DP-4000

Applications

- Monitoring of all common electrical parameters
- Optional protective alarm functions

Metered/Monitored Parameters

- RMS sensing
- Phase currents
- Volts: L-L, L-N
- Power: real, reactive, apparent
- Energy: real, reactive, apparent
- Frequency
- Power factor
- % THD: Current and Voltage
- Min/max values
- Fixed or sliding demand windows

Communications

- Optional interface capability to computer network for data collection, storage and/or printout via the Cutler-Hammer PowerNet System

Physical Characteristics

- Large visible LED display
- Height: 10.25 inches
- Width: 6.72 inches
- Depth:4.42 inches without PONI 5.40 inches with PONI
- Membrane Faceplate NEMA 3R and 12 rated

Listings/Certifications

- UL/CUL/CSA Listed
- CE mark EN61010-1 (1993) EN50082-2 (1994)

Ratings

- Application to 500 kV, no PTs to 600V
- CT ratios selectable from 5:5A to 12800:5A
- Standard 120/600 Vac line 3-phase power supply module, 99-264 Vac or 99-275 Vdc. Two separate source power supply modules available

General Description

The IQ DP-4000 is a microprocessor-based monitoring and protective device that provides complete electrical metering and system voltage protection. In one compact, standard package the IQ DP-4000 will provide an alternative to individually mounted and wired conventional meters and switches. The new DP-4000 also monitors Apparent Power (VA), Reactive Energy (Var-Hours), Apparent Energy (VA-Hours), and percent THD to provide the user with basic power quality information. The IQ DP-4000 meets and surpasses UL/CSA/CE standards.

The IQ DP-4000's rugged construction is designed to withstand harsh conditions such as temperature variations, outdoor applications, and industrial environments. The membrane faceplate pushbuttons are easy-to-use and both the parameter LED and window displays are easily visible.

Protective/Event Alarming

- Undervoltage
- Overvoltage
- Current phase loss
- Voltage phase loss
- Phase reversal
- Phase unbalance
- Optional current and power demand threshold

Retrofit Opportunities

- Retrofit of existing electrical distribution systems with the IQ DP-4000 for power, quality, load, and energy monitoring.
- Mounting Flange option for application where additional door mounting space is required. (See TD.17.08.T.E page 2).

Historical Values

- Present Demand Current (Per Phase) 5, 10, 15, 20, 25, 30, 45 or 60 minute windows
- Present Demand Watts, Vars, and VA 5, 10, 15, 20, 25, 30, 45 or 60 minute windows
  Sliding or fixed window for power
  Sync pulse input (Model 4100)
  Cutler-Hammer PowerNet broad cast demand sync
- Minimum and Maximum Values
  Current (per phase)
  Voltage (per phase, L-L, L-N)
  Watts, Vars and VA
  Power Factor (displacement and apparent)
  Frequency
- Peak Values
  Percent THD Parameters
  Demand Parameters

Alarm/Protective Functions

- Alarm/Protective functions (all models) include:
  Overvoltage
  Undervoltage
  Current phase loss
  Voltage phase loss
  Phase unbalance
  Phase reversal
- User-programmable alarm and reset threshold levels and delay intervals
- Optional Current and Power Demand Threshold

Description of Protection Functions

Overvoltage

Range 105% to 140% (5% increments).

Undervoltage

Range 60% to 95% (5% increments).

Phase Unbalance

Deviation between any two phases percentage of nominal line voltage preset by DIP switches. Range 5% to 40% (5% increments).

Phase Reversal

Any two phases become reversed for the selected delay.

Voltage Phase Loss

Less than 50% of the nominal line voltage detected.

Current Phase Loss

Smallest phase current is less than 1/16 of the largest phase current.

Delay

Allows a delay before an alarm occurs. (Range 1-20 seconds in 1 second increments).

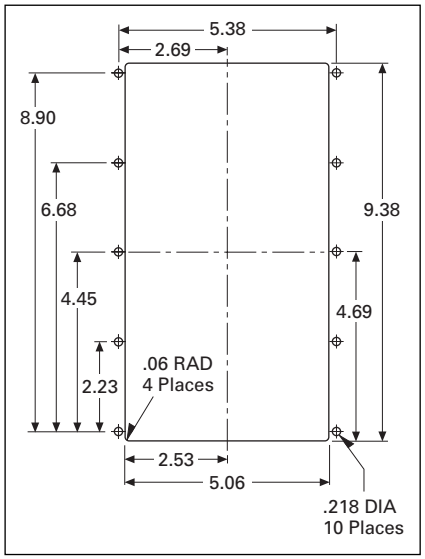
Note: Unit must be powered for this to occur.

Inputs/Outputs (4100 Model)

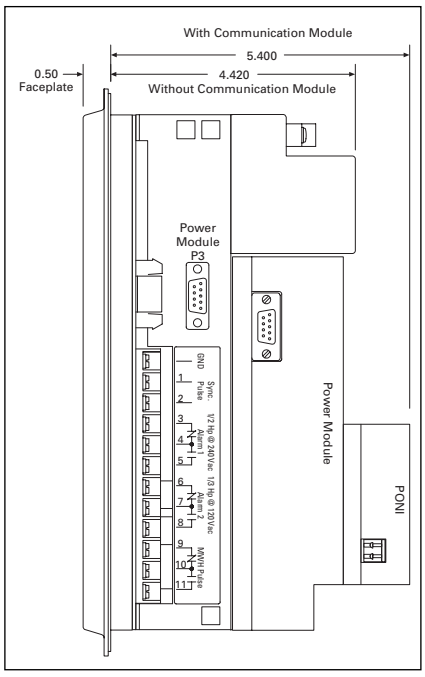
- Three form C relay outputs selectable: Trip, Alarm, kWHR pulse initiator
- One synch input for kW utility demand sync

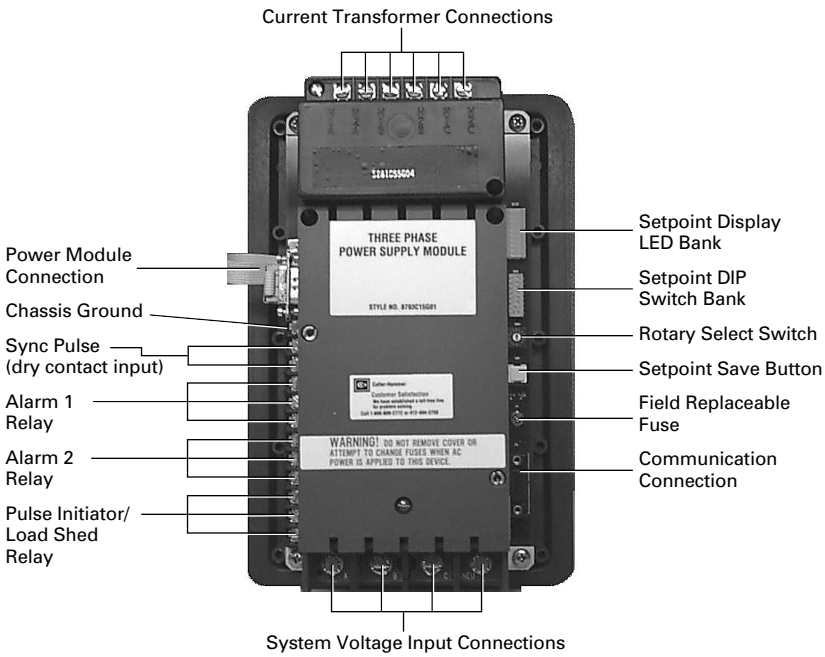
Model	Input	Output
4000 4100	0 1 Digital (dry contact)	0 3 Relays

Drilling Pattern



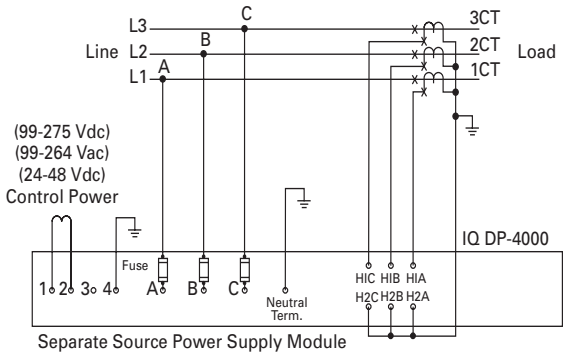
IQ DP-4000 Side View



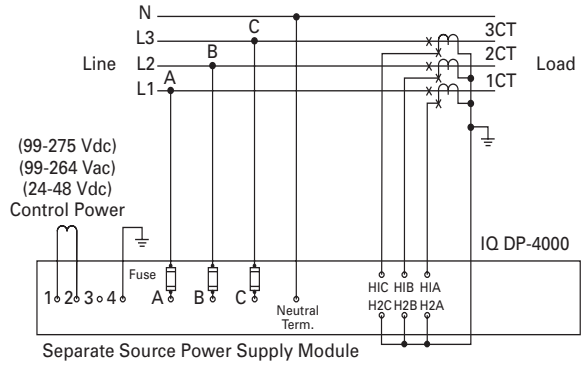


Field Wiring Connections

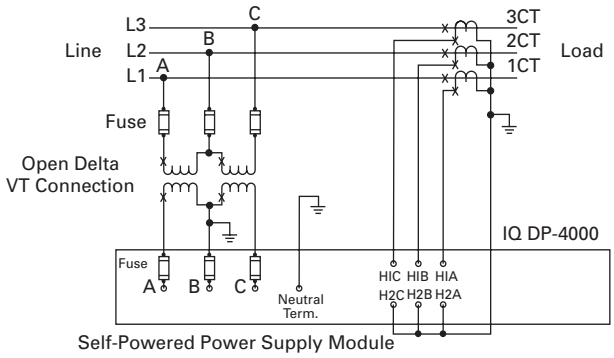
3-Phase 3-Wire (Up to 600 Volts)
Direct Voltage Connection and External Current Transformers



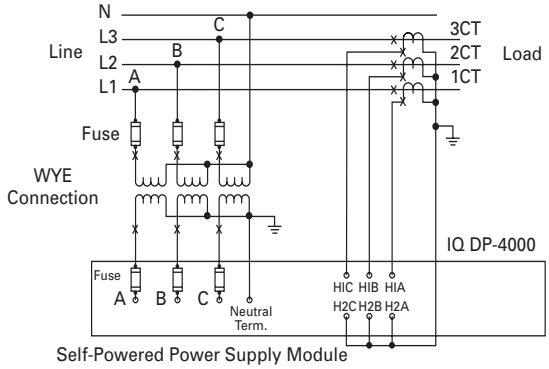
3-Phase 4-Wire (Up to 600 Volts)
Direct Voltage Connection and External Current Transformers



3-Phase 3-Wire (Above 600 Volts)
External Voltage Transformers and Current Transformers



3-Phase 4-Wire (Above 600 Volts)
External Voltage Transformers and Current Transformers



Specifications

Power Requirements
10 VA

Frequency
50/60 Hz

Operating Temperature
-25° to 70°C

Operating Humidity
0.0% to 95% noncondensing

Dry Contact Input
24 Vdc differential across input pair of terminals; minimum pulse width, 50 msec

Fuses
(Supplied with three-phase power module only.) 3/4 ampere, 600-volt bus type KTK-R-3/4 (3 required)

Contact Rating (Model 4100)
10 amperes at 120/240 Vac (resistive)
10 amperes at 30 Vdc (resistive)

Compatible with the following systems:
3-phase 3-wire, 3-phase 4-wire

Weight
6.5 lbs (shipping weight)

Accuracy
Maintained from 3% to 250% of CT primary rating

UL/CUL/CSA Listed

CE mark
EN61010-1 (1993), EN50082-2 (1994)

Current Input (Each Channel)

Nominal Full Scale Current:	5 amperes ac
Current Range for Rated Accuracy:	0-15 amperes ac
Overload Withstand:	15 amperes ac continuous 300 amperes ac 1 second
Burden:	0.003 VA

Voltage Input (Each Channel)

Voltage Range (Nominal):	90-600 Vac
Nominal Full Scale Voltage:	120-600 Vac
Overload Withstand:	660 Vac continuous 4 kV 1.2/50µs
Burden:	3-phase power module 10 VA

Control Power Input

	Separate Source	Self Powered	Dc Source
Input Range, ac	110-240 Vac ±10%	110-600 Vac ±10%	N/A
Frequency Range	45-66 Hz	45-66 Hz	N/A
Input Range, dc	110-250 Vdc ±10%	N/A	24-48 Vdc ±20%
Burden	10 VA	10 VA	10 VA

Displayed Values

	Displayed Through Cutler-Hammer PowerNet System	Local Display
Ac Amperes Phases A, B, C Ac Voltage, Phase A-B, B-C, C-A Phase A-N, B-N, C-N	± 0.3% ± 0.3% ± 0.3%	± 0.3% ± 1 digit ± 0.3% ± 1 digit ± 0.3% ± 1 digit
Watts Vars VA	± 0.6% ± 0.6% ± 0.6%	± 0.6% ± 1 digit ± 0.6% ± 1 digit ± 0.6% ± 1 digit
Watt-hours Var-hours VA-hours	± 0.6% ± 0.6% ± 0.6%	± 0.6% ± 1 digit ± 0.6% ± 1 digit ± 0.6% ± 1 digit
Power Factor Frequency % THD	± 1% ± 0.1 Hz Through 31st Harmonic	± 1% ± 0.1 Hz Through 31st Harmonic

Note: All accuracy is measured as a percentage of full scale.

Ordering Information

IQ DP-4000

Description	Catalog Number
Separate source control power without I/O Separate source control power without I/O, dc supply Three-phase power supply without I/O	**IQDP4010** **IQDP4020** **IQDP4030**
Separate source control power with three Form C relay output contacts and one sync pulse input Separate source control power with three Form C relay output contacts and one sync pulse input, dc supply Three-phase power supply with three Form C relay output contacts and one sync pulse input	**IQDP4110** **IQDP4120** **IQDP4130**
4 indicates a DP-4000 model x=0 indicates no I/O; x=1 indicates I/O y=1 indicates separate source supply, y=2 indicates 24-48 Vdc power supply, y=3 indicates three-phase power supply	**IQDP4xy0**