



Supersedes 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

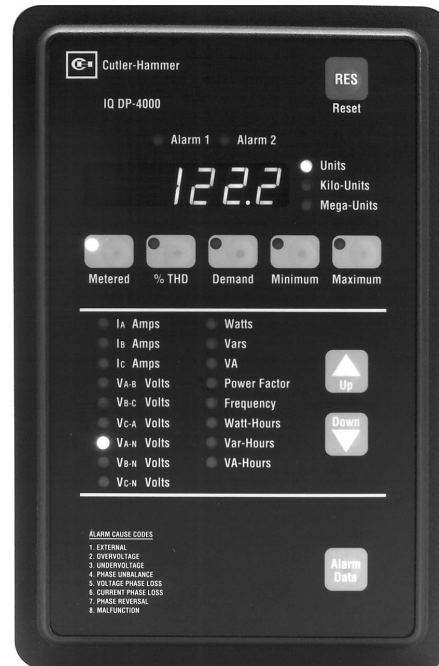
- Large visible LED display
- Height: 10.25 inches
- Width: 6.72 inches
- Depth: 4.42 inches without PONI  
5.40 inches with PONI
- Membrane Faceplate NEMA 3R and 12 rated

#### 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).
- Separate wall mounted enclosure, Enclosed IQ (See TD.17.08.T.E page 1).

**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.

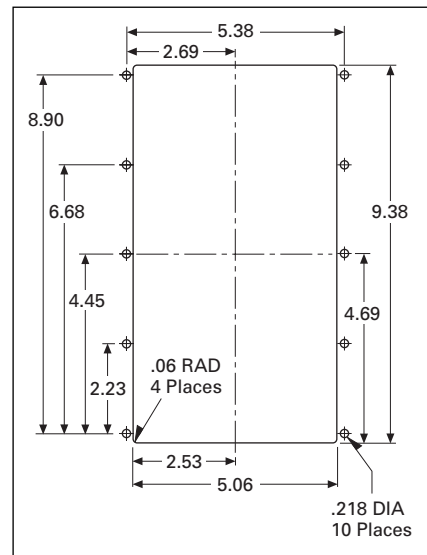


**Inputs/Outputs (4100 Model)**

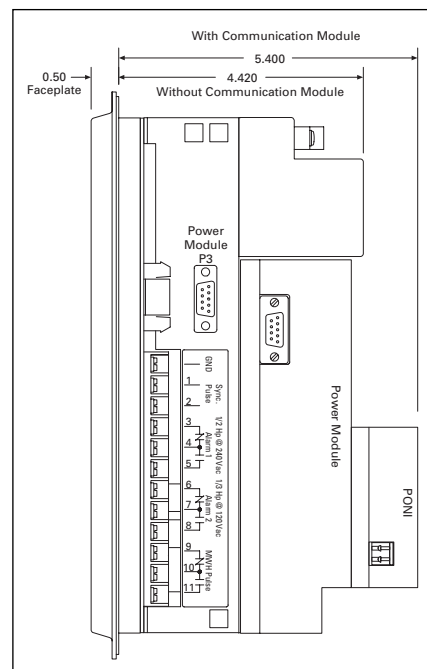
- Three form C relay outputs selectable: Trip, Alarm, kWHR pulse initiator
- One synch input for kW utility demand sync

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

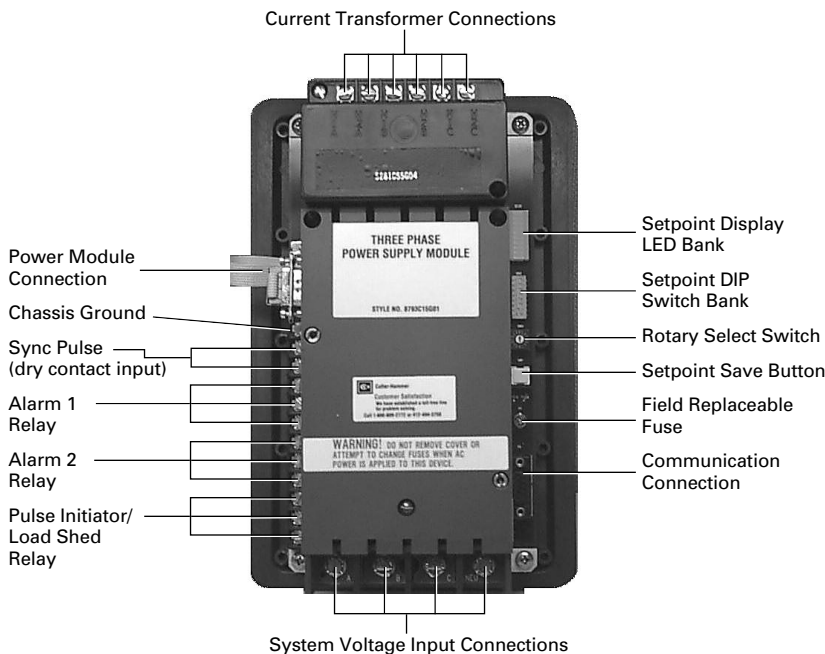
**Drilling Pattern**



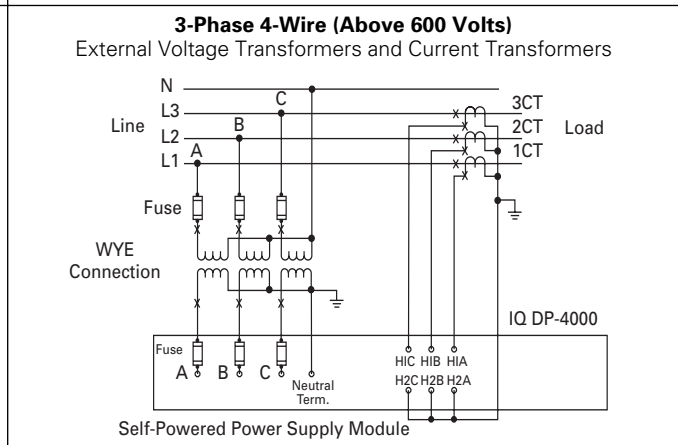
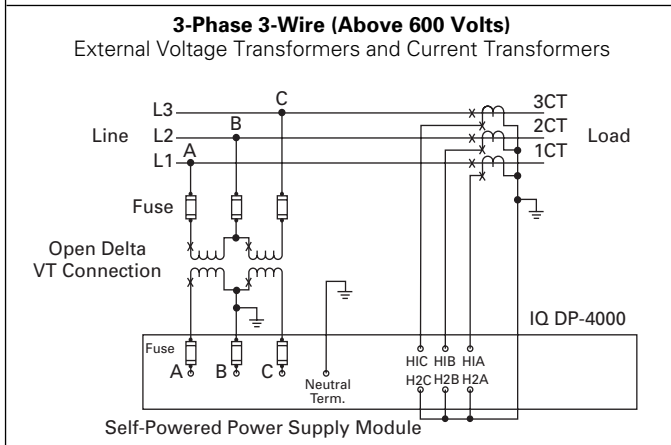
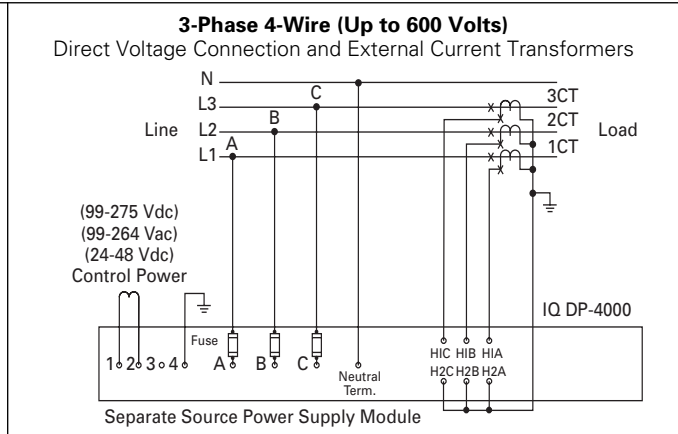
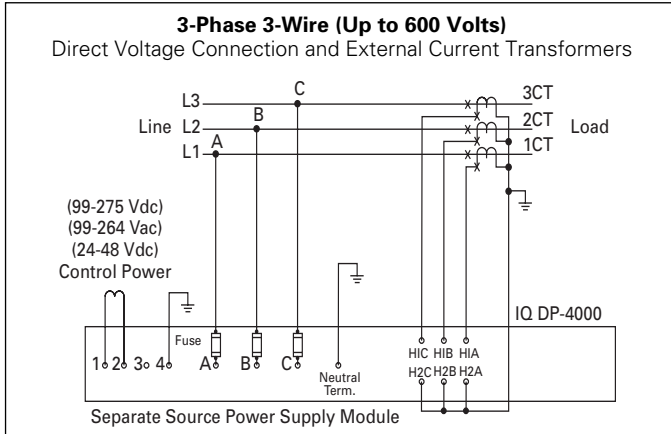
**IQ DP-4000 Side View**



Current Transformer Connections



Field Wiring Connections



**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	± 0.3%	± 0.3% ± 1 digit
Ac Voltage, Phase A-B, B-C, C-A	± 0.3%	± 0.3% ± 1 digit
Phase A-N, B-N, C-N	± 0.3%	± 0.3% ± 1 digit
Watts	± 0.6%	± 0.6% ± 1 digit
Vars	± 0.6%	± 0.6% ± 1 digit
VA	± 0.6%	± 0.6% ± 1 digit
Watt-hours	± 0.6%	± 0.6% ± 1 digit
Var-hours	± 0.6%	± 0.6% ± 1 digit
VA-hours	± 0.6%	± 0.6% ± 1 digit
Power Factor	± 1%	± 1%
Frequency	± 0.1 Hz	± 0.1 Hz
% THD	Through 31st Harmonic	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	<b>IQDP4010</b>
Separate source control power without I/O, dc supply	<b>IQDP4020</b>
Three-phase power supply without I/O	<b>IQDP4030</b>
Separate source control power with three Form C relay output contacts and one sync pulse input	<b>IQDP4110</b>
Separate source control power with three Form C relay output contacts and one sync pulse input, dc supply	<b>IQDP4120</b>
Three-phase power supply with three Form C relay output contacts and one sync pulse input	<b>IQDP4130</b>
4 indicates a DP-4000 model	<b>IQDP4xy0</b>
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	
IQ Analyzer/IQ DP-4000 auxiliary power supply	<b>IQDPAUXPS</b>

Copyright Cutler-Hammer Inc., 2000.  
All Rights Reserved.

