

1.1 INTRODUCTION

The IQ DP-4000 is a microprocessor-based monitoring and protective device that provides electrical metering and system voltage protection. This device is a compact, self-contained, panel-mounted device designed to replace numerous individual meters, relays, and recorders. The IQ DP-4000 is available in four models - 4010, 4030, 4110, and 4130. Table 1.A compares the models' features.

Model	Power Module	I/O
4010	Separate Source	No
4030	3-Phase	No
4110	Separate Source	Yes
4130	3-Phase	Yes

Table 1.A Model Comparison

The IQ DP-4000 measures:

- AC Line Current (each phase)
- AC Line to Line Voltage
- AC Line to Neutral Voltages (for 4 wire systems)
- Watts
- Vars
- VA
- Power Factor (apparent and displacement)
- Demand (Watts, Vars, VA, Currents)
- Frequency
- %THD (currents and voltages)
- Watt-hours
- Var-hours
- VA-hours

The IQ DP-4000 monitors the ac line feeding a specific load or loads and detects conditions that exceed your chosen parameters. In all cases, it detects the following listed conditions. If equipped with the optional I/O module (models 4110 and 4130), it can protect the loads against:

- Undervoltage
- Overvoltage
- Current Phase Loss
- Voltage Phase Loss
- Phase Reversal
- Phase Unbalance

Voltage may be directly monitored on 3-phase AC lines within a range of 120 to 600 VAC nominal without external potential transformers and within a range above 600VAC to 510 KV with external potential transformers (PTs). Current monitoring is through external current transformers (CTs) with ratios between 5/5 to 12,800/5.

Typical applications for the IQ DP-4000 are:

- Incoming 3-Phase AC lines
- Transformer feeder circuits
- Branch circuits
- Motor starters
- 3-Phase electrical loads

The device will automatically display the appropriate unit value (in Units, Kilo-Units, or Mega-Units) of the item displayed on the screen. The values have a floating decimal point.

The program directing the monitoring function is permanently stored in the IQ DP-4000. The setpoints you choose are also retained by the non-volatile EEPROM memory.

The non-volatile memory of the IQ DP-4000 will save a snapshot of all metered values just after an alarm condition. The IQ DP-4000 can store two alarm conditions at the same time. You can view the snapshot for each alarm, and record the values before or after resetting the unit.

The operator panel, the unit's front faceplate, has a display window that indicates the actual value of the selected item. The Display Window also indicates the cause of the detected alarm signal.

You choose and enter the individual setpoints by setting the setpoint switches. You can easily program the device in the field because you do not need a specialized programming language. With the new Setpoint Switch design, you can program the unit to handle a large number of current transformer and voltage transformer ratios.

1.2 REQUIRED USER-SUPPLIED HARDWARE

In all instances, it is recommended that the IQ DP-4000 use three user-supplied external current transformers, with 5 amp secondaries, for metering current functions. In retrofit cases, where only two current transformers are provided, refer to the sample wiring diagrams (Figures 4.4 - 4.15).

Note: A 2 CT arrangement will work, but will not detect a current phase loss on L2.

For voltages above 600V, you must supply potential transformers to step down the voltage to match the

maximum allowable voltage permitted by the unit. See Table 5.F for the voltage ranges that the IQ DP-4000 monitors.

1.3 UPGRADING FROM THE IQ DATA PLUS II

The IQ DP-4000 replaces the IQ Data Plus II (DP II). The IQ DP-4000 features all the monitor and display parameters of the DP II and also adds:

- Metering of VA, Var-hours, VA-hours, and %THD
- Optional I/O module
- Min/Max for voltages, current, and power
- Demand/Peak Demand
- Max % THD (currents and voltages)
- Metering parameters with an active alarm condition present
- Expanded IMPACC functionality
- Increased range and resolution for metered parameters

For backward compatibility with existing IMPACC systems, the IQ DP-4000 features an IQ Data Plus II communications mode which formats all buffers as if the product were a Data Plus II. This is the default communications mode when the unit is manufactured. See Section 5.14 to change this setpoint.



FOR FULL BACKWARD COMPATIBILITY, ALL SETPOINTS MUST CORRESPOND WITH AN EXISTING VALID DPII SETPOINT. SEE TD 17271 FOR DATA PLUS II SETTINGS. THE WIRING IS IDENTICAL WITH THE EXCEPTION OF THE SEPARATE SOURCE POWER MODULE TERMINALS. NOTE THAT NO JUMPERS ARE REQUIRED FOR 120/240 VOLT SELECTION.

1.4 REPLACEMENT PARTS

Refer to Table 1.B for a list of available parts and accessories for the IQ DP-4000. For ordering information, contact your local Cutler-Hammer distributor.

Description	Catalog Number	Style Number
IQ DP-4000 with 3-phase power module without I/O module	IQDP4030	4D13110G01
IQ DP-4000 with separate source power module without I/O module	IQDP4010	4D13110G02
IQ DP-4000 with 3-phase power module with I/O module	IQDP4130	4D13110G03
IQ DP-4000 with separate source power module with I/O module	IQDP4110	4D13110G04
3-phase power module	IQA3PPM	8793C15G01
Separate source power module	IQASSPM	8793C07G01
36" extension cable	IQACABLE	2107A55G02
45" extension cable	IQA45CABLE	2107A55G03
IQ mounting flange	IQFLANGE	5743B02G01
Communication module	IPONI	8793C36G01
IQ DP-4000 Auxiliary Power Supply	IQDPAUXPS	5743B37G01
IQ DP-4000 Configuration Utility (setpoint programming aid)	See the Cutler-Hammer website at www.cutlerhammer.eaton.com	

Table 1.B Parts and Accessories