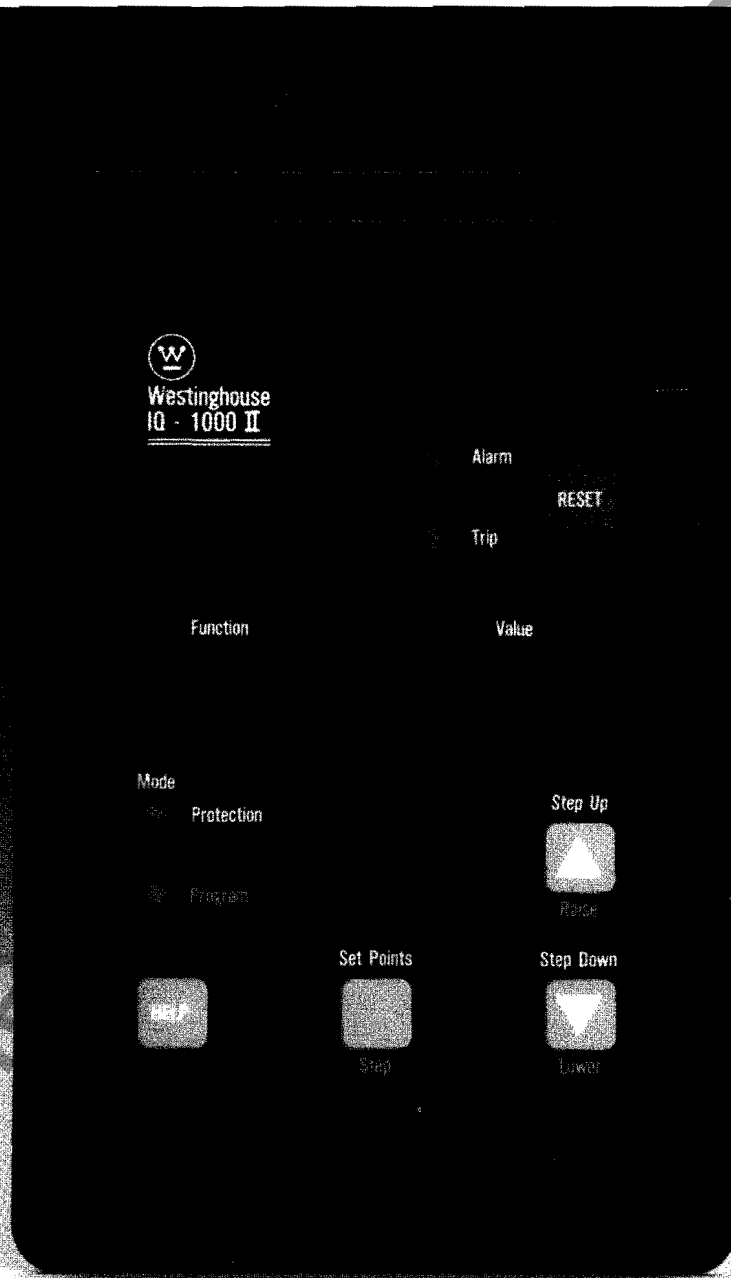




# IQ 1000 II



### IQ-1000 II Maximizes Motor Utilization

The IQ-1000 II is a multifunctional, motor protective relay that monitors three phase AC current and makes separate trip and alarm decisions based on preprogrammed motor current and temperature conditions. The IQ-1000 II's patented motor protection algorithm is based on proven positive and negative (unbalanced) sequence current sampling and true RMS calculations. Experience has shown that this algorithm produces a superior model of motor heating, thereby providing the user with maximum motor utilization—precise motor protection that virtually eliminates nuisance tripping.

The IQ-1000 II is designed so that it will trip only if a user-programmed trip level has been reached. Thus, a motor is fully protected, but will not be shut down by nuisance tripping. The IQ-1000 II allows the motor to operate fully within the current and temperature limits for which it was designed. The IQ-1000 II minimizes expensive downtime and **keeps the motor running.**

### Optimizes Motor Protection

By simply programming the IQ-1000 II with the motor's electrical characteristics, the IQ-1000 II's I<sup>2</sup>t algorithm will automatically tailor the optimal protection curve to the motor being monitored. Only four characteristics need to be entered for the IQ-1000 II to develop its motor protection curve:

- Full Load Amps
- Locked Rotor Current
- Locked Rotor Time (stall time)
- Ultimate Trip Current (typically service factor)

No guesswork or approximation is needed in selecting a given protection curve because the IQ-1000 II develops a curve directly from the motor's characteristics.

Since different sizes and types of motors have different characteristics, the IQ-1000 II's algorithm can be modified for the specific requirement of each motor being monitored. An "infinite" number of protection curves can be generated to protect any motor.

Application-related motor load problems are further addressed through the use of such

functions as Jam, Underload, and Ground Fault protection. As an example, see the typical motor protection curve shown on the opposite page.

### Motor Protection and Data

As illustrated in the typical motor protection curve, the IQ-1000 II can provide a cost effective alternative to several conventional protective relays including short-time and long time current relays, instantaneous overcurrent relays, ground fault relays and more. Metered data can be displayed by the IQ-1000 II, including current, motor temperature (if RTD's are used) and number of motor starts. Metered data just prior to a trip is also stored in the IQ-1000 II, providing a "picture" of the motor conditions when the trip occurred. This information can be invaluable in troubleshooting and resolving motor trips. This data is available either directly using the IQ-1000 II's built-in display or remotely using IMPACC—the Westinghouse network for communicating information to and from compatible devices on an electrical distribution system.

#### Specifications

##### Input Supply Requirements

120/240 VAC  
(+ 15%, - 30%)

##### Frequency

50 or 60 Hz  
(software selectable)

##### Power Consumption

IQ-1000 II = 6 VA  
RTD Option = 6 VA  
Com. Card = .08 VA

##### Output Contact Rating

10 A at 240 VAC Resistive  
10 A at 30 VDC Resistive

##### Current Transformer Burden

0.003 VA

##### Operating Temperature

0 to 70°C  
(32 to 158 F)

##### Storage Temperature

-20 to 85°C  
(-4 to 185°F)

##### Humidity

0 to 95%  
(noncondensing)

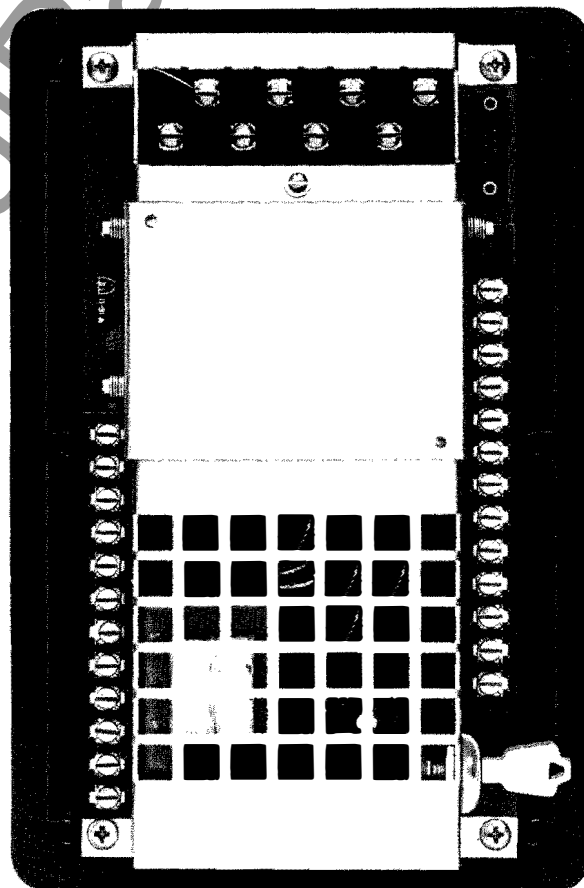
##### IQ-1000 II Dimensions

Height = 10.24 in. (26 cm)  
Width = 6.75 in. (17.2 cm)  
Depth = 2.5 in. (6.4 cm)  
without Communications option  
3.67 in. (9.3 cm)  
with Communications option

##### Shipping Weight

7 lbs  
(15.4 kg)

Rear View





### IQ-1000 II Protection Features

- Positive and negative (unbalance) sequence current algorithm automatically determines protection curve for a given motor
- Locked rotor current: Device 51
- Ultimate trip current level: Device 51
- Maximum allowable stall time
- I<sup>2</sup>t alarm level: Device 74
- Instantaneous overcurrent trip level and start delay: Device 50  
Programmable trip level (0-1600% FLA)
- Zero Sequence Ground Fault trip level with start and run time delays: Device 50G/51G  
Programmable trip level (1-12 amps)
- Separate trip and alarm motor temperature set points (eleven RTD inputs are available as an option)  
Six Stator Windings – Overtemperature: Device 49  
Two Motor Bearings – Overtemperature: Device 38  
Two Load Bearings – Overtemperature: Device 38  
One Auxiliary – Overtemperature

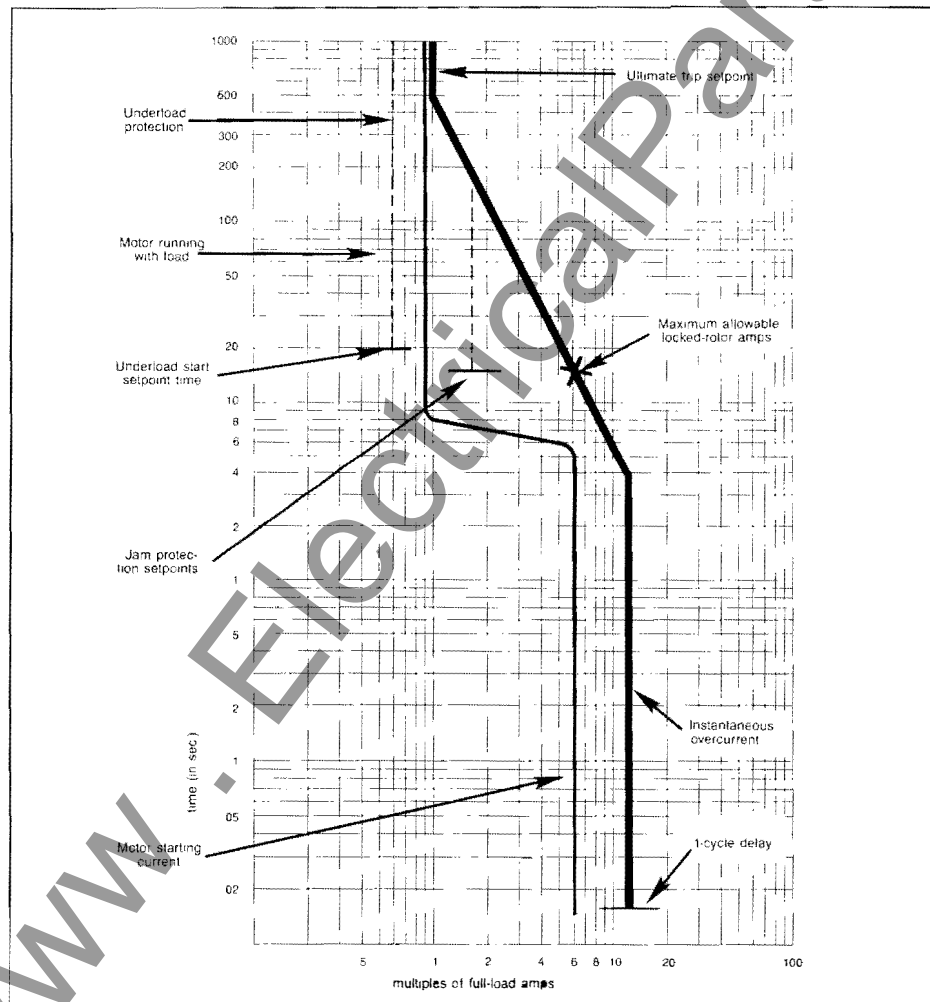
- Jam trip level with start and run time delays  
Programmable trip level (100-1200% FLA)
- Underload trip level with start and run time delays: Device 37  
Programmable trip level (0-90% FLA)
- Phase Loss and Phase Unbalance trip and alarm level with run delay: Device 46
- Number of motor "starts" allowed per time period: Device 66
- Anti-backspin time delay  
Programmable timer (0-600 seconds)
- Transition signal for reduced voltage starters: Transition based upon current level within a programmable time limit; Selection of transition or trip when timer expires
- Incomplete Sequence delay: Device 2/19  
Programmable timer (1-60 seconds)
- Trip Mode:  
Mode 1: Trip relay energizes on trip condition (normal mode for relay operation)  
Mode 2: Trip relay energizes on power up and de-energizes on trip condition or loss of power (fail-safe mode for relay operation)

- Phase reversal for non-reversing starters: Device 46  
Selection of non-reversing or reversing starters
- Selection of trip, reset, differential trip or motor stop on remote input
- Frequency selection—50 hz or 60 hz
- Selection of auto or manual reset (for I<sup>2</sup>t trip)

### IQ-1000 II Monitored and Displayed Values

- Motor current for each phase
- Motor ground current
- Motor current as a percent of full load amps for each phase
- Temperature readings from up to eleven Resistance Temperature Detectors (RTDs) — optional
- Operations count (number of times the motor has been started)
- Run time (number of hours the motor has been running)
- Remaining starts
- Oldest start: Time remaining before "oldest" start is restored to "remaining" starts
- Highest phase current
- Highest winding temperature
- Number of trips  
I<sup>2</sup>t  
Instantaneous Overcurrent  
Underload  
Jam  
Ground Fault  
RTD
- Device address (if connected to IMPACC local area network)
- Percent of I<sup>2</sup>t trip level

IQ-1000 II Motor Protection Curve (without RTDs)



### IQ-1000 II Inputs and Outputs

#### Inputs

- 120 or 240 VAC control power (auto-selecting)
- Remote 120 VAC input programmable for one of the following:  
Trip  
Reset  
Differential trip  
Motor Stop
- Incomplete Sequence (contact closure report back for sequencing applications)
- RTD inputs from optional RTD module
- Three (3) Current Transformer connections for phase currents. Programmable for the following CT ratios:  
10:5 100:5 400:5 1500:5  
20:5 125:5 500:5 2000:5  
25:5 150:5 600:5 2500:5  
40:5 200:5 800:5 3000:5  
50:5 250:5 1000:5 4000:5  
75:5 300:5 1200:5
- One (1) 50:5 Zero Sequence Ground Fault CT for Ground Fault protection

#### Outputs: Four form C relays

- Trip relay: Device 86
- Auxiliary trip relay (programmable): Device 86 or Device 74
- Alarm (trip pending) relay: Device 74
- Transition relay: Device 48



**Outputs: Communications**

- 4-20 mA output. Maximum output (20 mA) programmable for one of the following:
  - 100% of full load amps
  - 125% of full load amps
  - Trip level for motor winding RTD's
  - 100% of I<sup>2</sup>t trip level
- INCOM communications port – Compatible with PONI communications module. Allows for communication of device information over Westinghouse IMPACC communications network.

**Customer Benefits**

- Motor protection algorithm based on proven positive and negative (unbalance) sequence current sampling and true RMS calculations. Provides maximum motor utilization—precise motor protection that virtually eliminates nuisance tripping.
- The IQ-1000 II provides a cost effective alternative to many relays, timers and meters:
  - Long and short delay current relays
  - Instantaneous overcurrent relays
  - Phase loss or phase unbalance relays
  - Underload and Jam relays
  - Transition time-delay relays for reduced voltage starting applications
  - Antibackspin timers
  - Incomplete sequence timers
  - Ammeters and switches
  - Starts/time devices
- A single, compact, standard, door-mounted design simplifies ordering, inventory, and panel layout. Saves panel space.
- User friendly—the IQ-1000 II incorporates a "HELP" feature, making programming and monitoring easy for the OEM and user.
- A programmable alarm relay output to warn of a pending trip condition.
- A programmable auxiliary trip relay that will actuate on a user-selected trip condition.
- Selectable manual or automatic reset from an I<sup>2</sup>t trip
- IQ-1000 II allows the "duty cycle" of the motor to be programmed to **maximize motor life**.
- A programmable Jam function provides "load" protection for application such as conveyors, wood chippers and rock crushers.
- A programmable Underload function provides response to load problems such as broken belts, drives, or motor shafts, or the loss of affluent in a pumping system.
- The IQ-1000 II provides a "snapshot" of all monitored values immediately prior to the time of trip providing valuable troubleshooting/maintenance information.
- A 4-20 mA analog output signal can be programmed by the user to output current or temperature information. This information can be easily manipulated by a programmable controller using an analog input card at the PC.
- Self-diagnostics: The IQ-1000 II continually monitors its own vital functions and

shuts down (trips) in the event of a failure. A message is displayed to show the failure cause.

- All setpoints are stored in nonvolatile memory—battery backup is not required.
- A key lock program/protection switch for security to allow access only to trained personnel. A restart can be activated in emergency situations.
- Single phase test mode for bench testing of most protection features
- Membrane faceplate: Designed to perform and tested in a harsh industrial environment (NEMA Type 3R, 12).
- Large 1/2 inch, 8 character LED display for easy viewing in any light source. Display "scrolls" for longer messages.
- UL recognized
- CSA certified

**Optional Benefits**

**Universal RTD Module Option**

- Motor Temperature can be monitored from up to eleven Resistance Temperature Detectors (RTDs), using a separate, optional Universal RTD Module. The module need only be purchased if the user has RTDs at his motor.
- The Universal RTD Module can be mounted either on the IQ-1000 II, or at the motor. If mounted at the motor, it can be as far as 500 feet from the IQ-1000 II. Motor temperature data can be transmitted from the module to the IQ-1000 II using either three wires or a fiber optic link. (Fiber optic link distance capability is 400 ft.)
- The module can accept six winding, two motor bearing, two load bearing and one auxiliary RTD. The following types of RTDs can be monitored by the Universal RTD Module:
 

10 Ohm Copper	100 Ohm Platinum
100 Ohm Nickel	120 Ohm Nickel

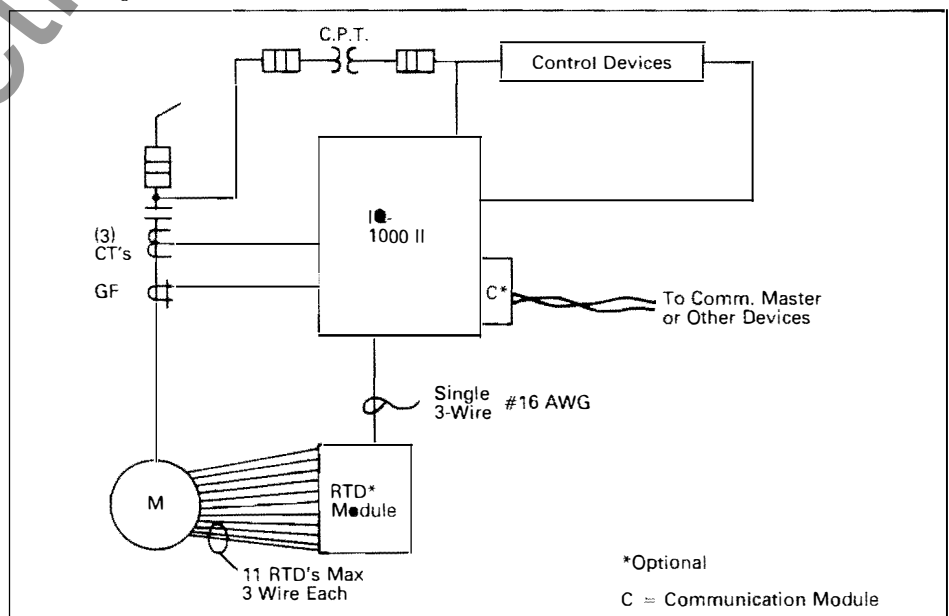
The type of winding, motor bearing, load bearing and auxiliary RTDs can be individually programmed at the module.

- All temperature values can be individually displayed. The IQ-1000 II will trip when any RTD exceeds its temperature setpoint. An alarm level can be programmed to warn the user of an impending trip.

**Communications Option**

- All IQ-1000 II data, including trip data, can be transmitted to a system master (e.g. personal computer or programmable controller) over IMPACC, Westinghouse's low cost local area network.
- A small, addressable communications (PONI) card is field mountable to the back of the IQ-1000 II. It can be easily retrofitted on any existing compatible device at any time.
- The IMPACC network will support a wide variety of devices that can monitor and/or protect an electrical distribution system. Westinghouse can supply devices that will meet a variety of needs including:
  - Metering—IQ Data Plus II, IQ Data and IQ Generator
  - Circuit protection—RMS Digitrip low voltage trip unit
  - Motor protection IQ-1000 II and IQ-500
- As many as 1000 IMPACC-compatible devices can communicate on one network. A network can have a maximum of five branches, each capable of being extended up to 7500 feet from the computer without repeaters.
- Two standardized software packages, IMPACC Series I and IMPACC Series III, are available for communicating to devices on an IMPACC network. These packages have been designed to meet a wide range of needs that different users may have. Contact your Westinghouse representative for more information on the IMPACC software offerings.

**Field Wiring Connections**





### Drawout Case Option

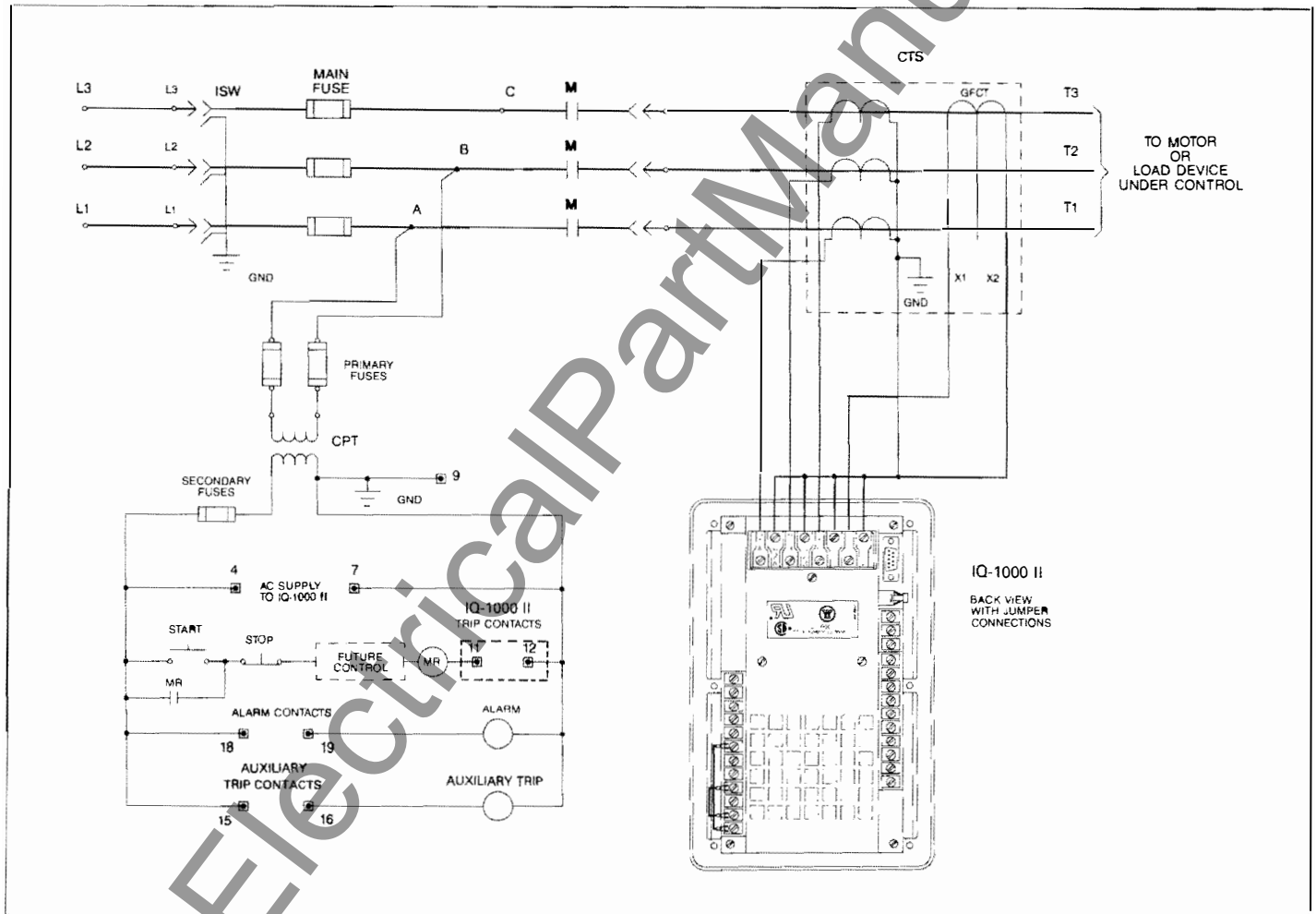
- A drawout case option is available for customers that desire easy removal and replacement of IQ-1000 II devices.
- The drawout case option must be specified at the time of order. Separate style numbers have been assigned for this option:  
2D78558G03 Drawout IQ-1000 II including case  
2D78558G01 Drawout IQ-1000 II only

### DC Power Inverter

- The SRM Power Supply Module is a DC to AC inverter module intended for use where AC power is required, but not readily available.
- Inverts a DC signal (between 40 VDC and 250 VDC) to a 60 hz, 125 VAC square wave.
- Produces 30 VA rated power output
- For more information on the SRM power supply, consult IL 17286.

For pricing information, consult Price List 8174. For information on the IMPACC network and other communications compatible devices, consult SA-11670.

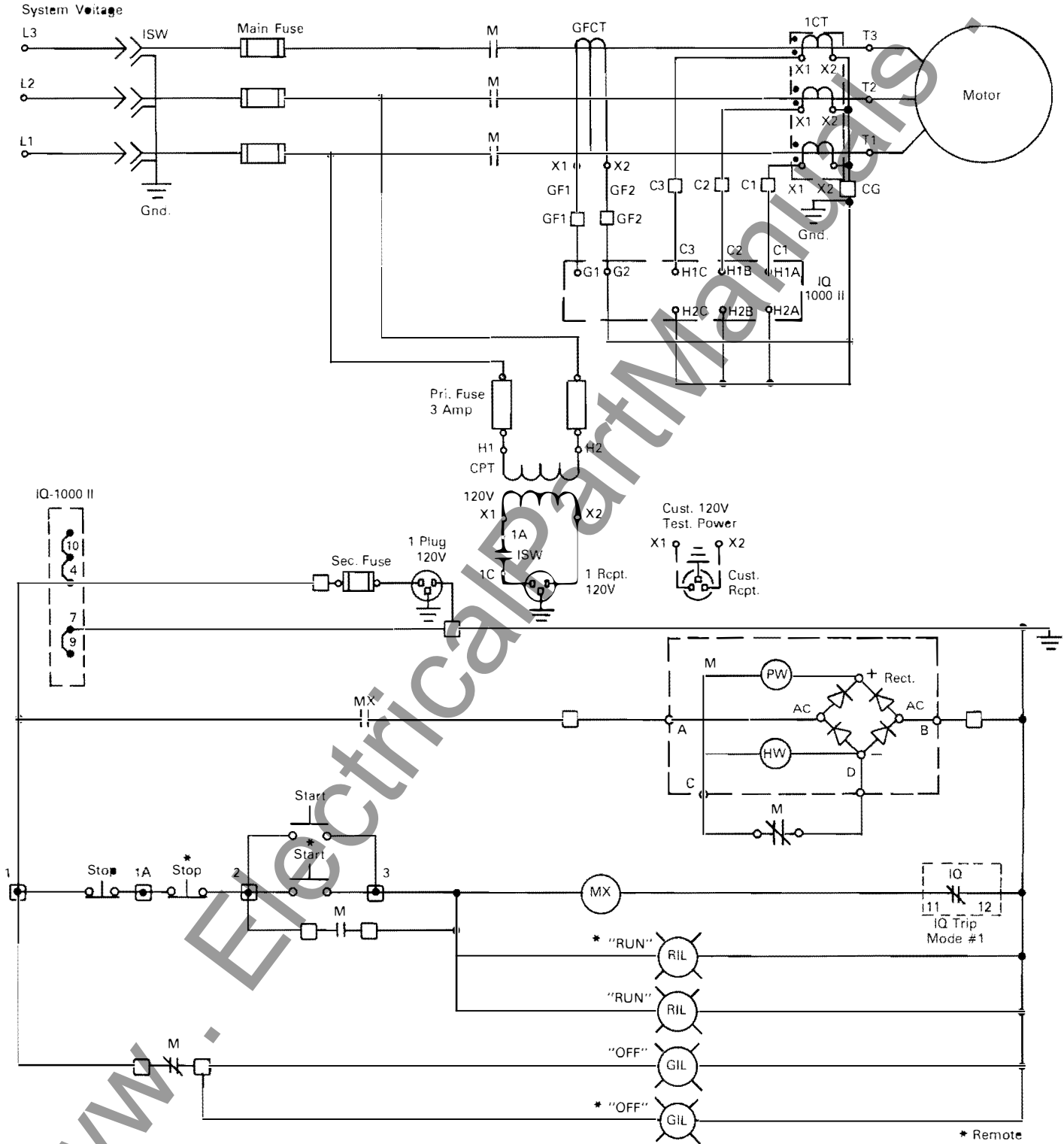
Wiring Plan Drawing (typical, Mode I)





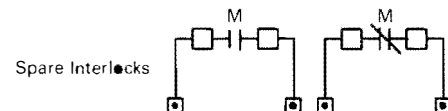
**Applying of an IQ-1000 II in an AMPGARD Medium Voltage Starter (Typical Control Schematic)**

**Typical Diagram for Vacuum Type SJ Contactor**



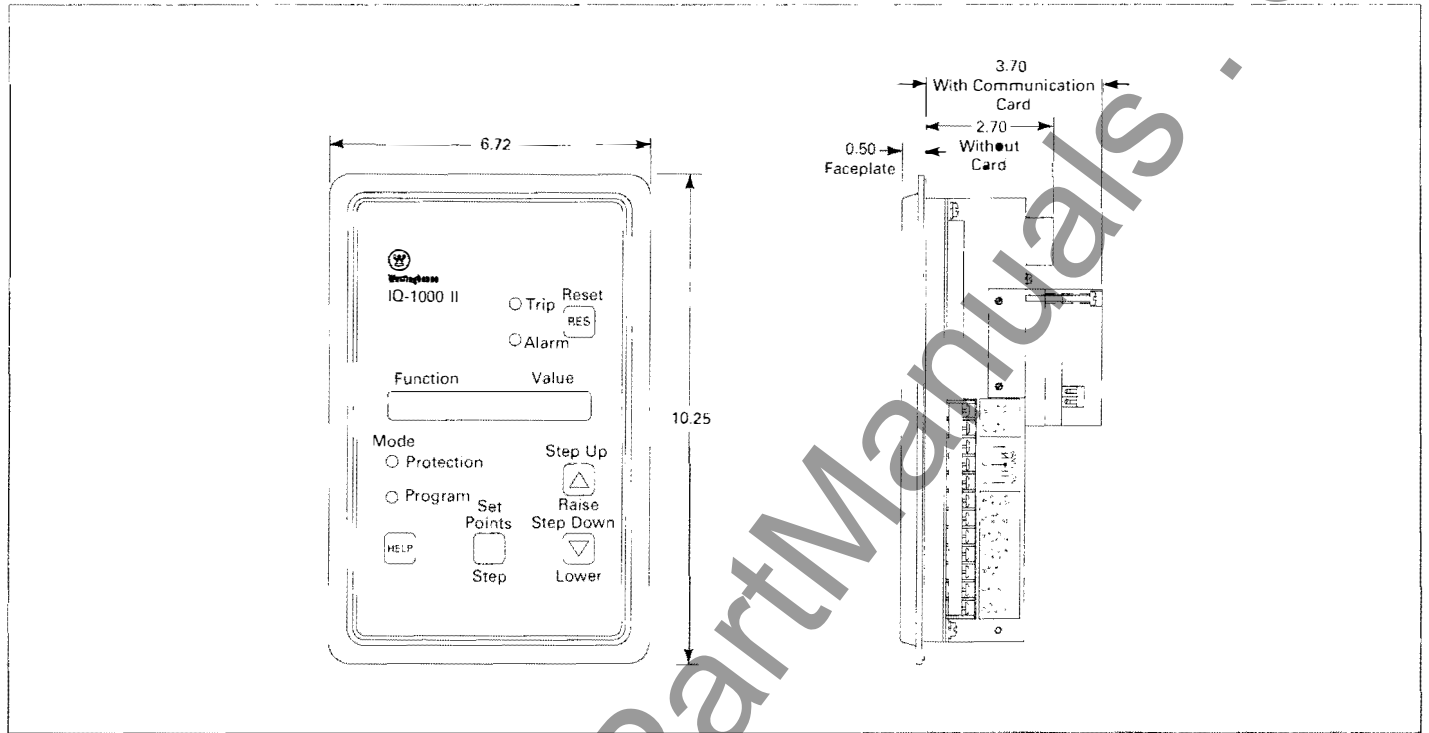
**Induction Motor Across-The Line Starter**

Vacuum Contactor With IQ-1000 II Motor Protection, Local & Remote Start-Stop Pushbuttons and Local & Remote Red and Green Indicating Lights.

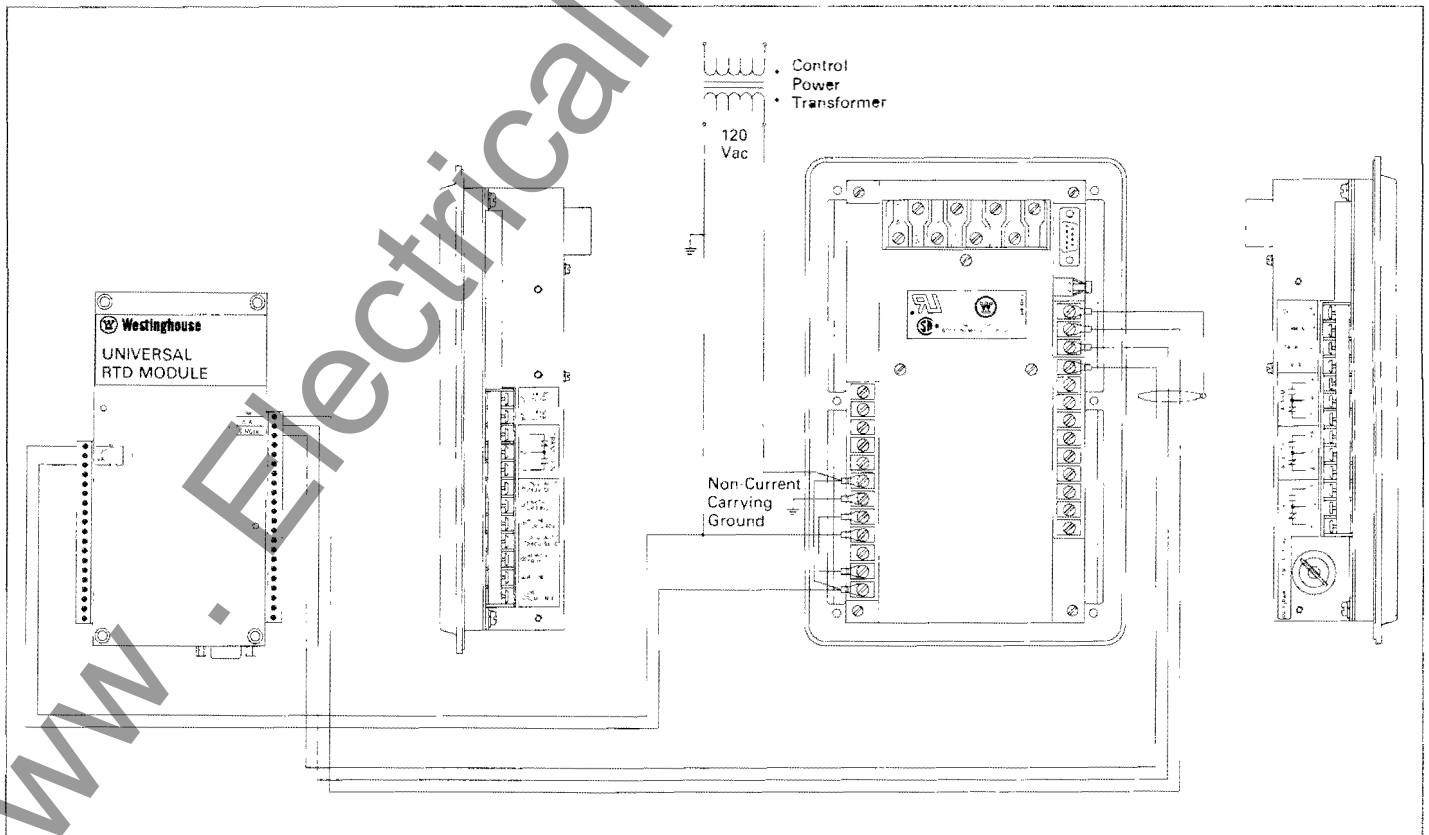


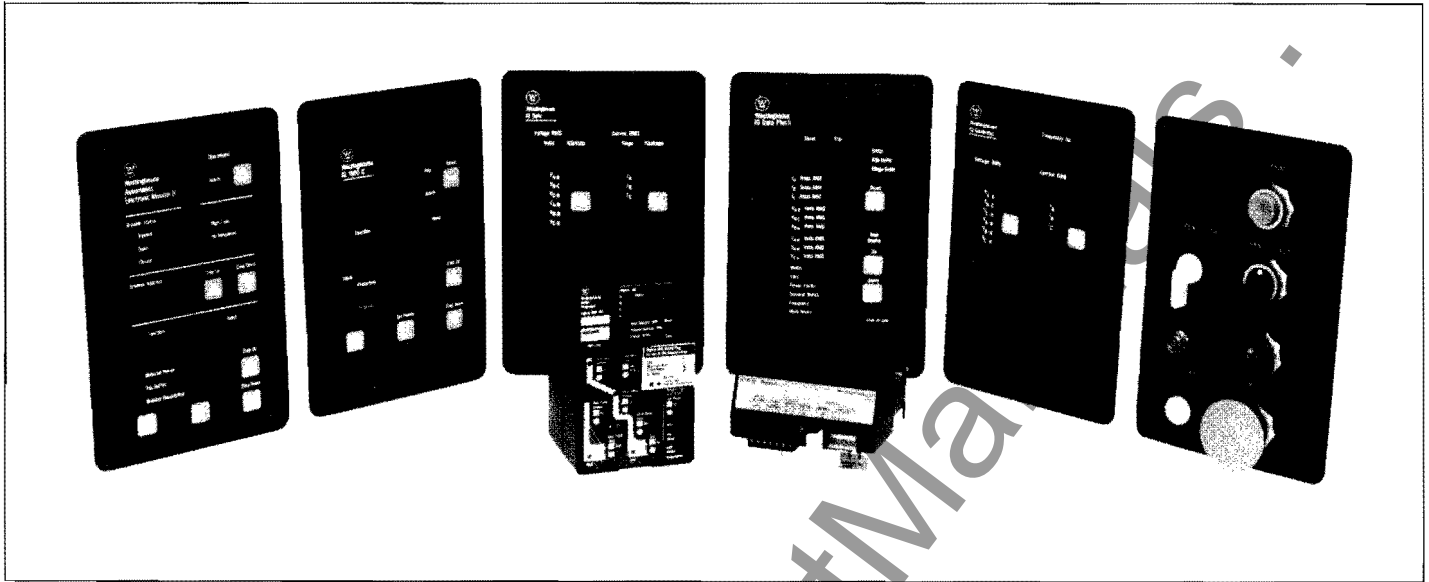


Dimensions (In inches)



Three Wire Connection Between IQ-1000 II and Universal RTD Module





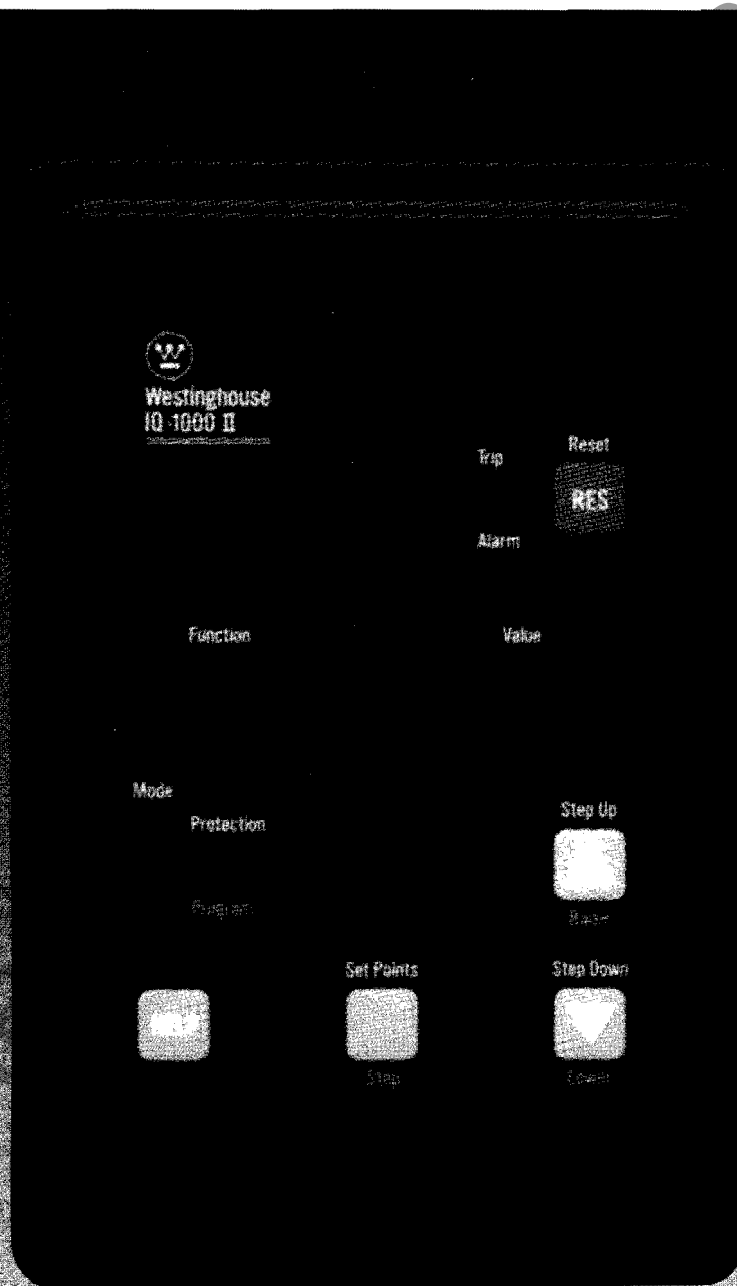
The Westinghouse IQ Family: AEM II, IQ-1000 II, IQ Data, IQ Data Plus II, IQ Generator, Device Panel, Digitrip RMS, and IQ-500.

Westinghouse Electric Corporation  
Distribution and Control Business Unit  
Electrical Components Division  
Pittsburgh, Pennsylvania, U.S.A. 15220





# IQ 1000 II



### Westinghouse IQ Motor Protective Relays

The IQ Motor Protective Relay family provides high performance in AC motor protection. In a compact, user-friendly design, the IQ 500 and the IQ 1000 II have paved the way for reliability and performance throughout the industry.

The IQ 500 is an adjustable class overload relay, providing many of the protective functions that can be found in the IQ 1000 II, but without the display feature.

The IQ 1000 II is a motor protective relay that monitors current and temperature. The IQ 1000 II is offered in low and medium voltage applications. Examples in Westinghouse assemblies include Ampgard Medium Voltage Motor Starters and the 21000 Series Motor Control Centers.

Both the IQ 500 and the IQ 1000 II are easily retrofitted into existing systems, and can communicate over IMPACC, Westinghouse's local area network for electrical distribution systems.

### IQ 1000 II

The IQ 1000 II is a multifunctional, motor protective relay that monitors three phase AC current and, optionally, temperature. It makes separate trip and alarm decisions based on user-programmed motor current and temperature set points. The IQ 1000 II's patented motor protection algorithm is based on proven positive and negative (unbalanced) sequence current sampling and true RMS calculations. Ten years of experience has proven that this algorithm provides the user with maximum motor utilization, virtually eliminating nuisance trips, while providing unparalleled motor protection.

The IQ 1000 II minimizes expensive downtime and **keeps the motor running.**

### Optimal Motor Protection

Since different sizes and types of motors have different characteristics, the IQ 1000 II's algorithm can be modified for the specific requirement of each motor being monitored. A nearly infinite number of protection curves can be generated to protect your motor.

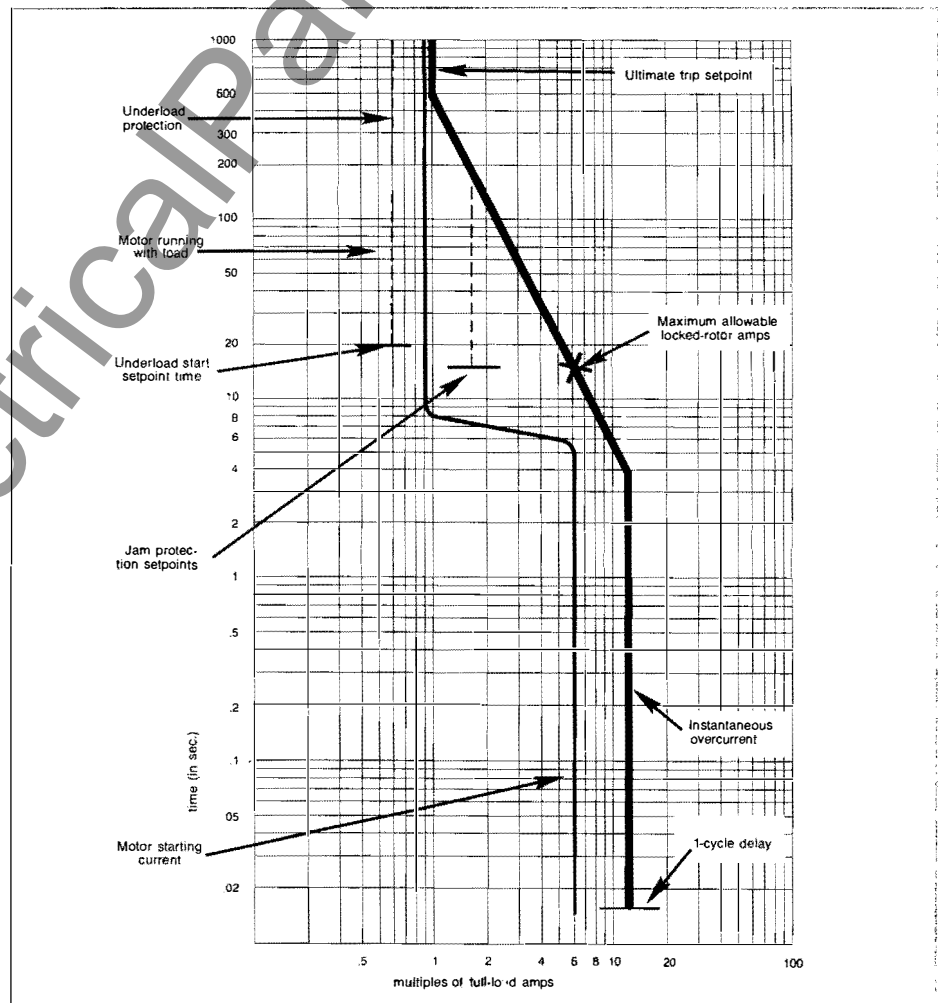
By simply programming the IQ 1000 II with the motor's electrical characteristics, the IQ 1000 II's I<sup>2</sup>T (overcurrent) algorithm will automatically tailor the optimal protection curve to the motor being monitored. Only four characteristics need to be entered for the IQ 1000 II to develop its motor protection curve:

- Full Load Amps
  - Locked Rotor Current
  - Locked Rotor Time (stall time)
  - Ultimate Trip Current (service factor)
- No guesswork or approximation is needed in selecting a given protection curve because the IQ 1000 II develops a curve directly from this information.

### Motor Protection, Metering, and Troubleshooting

As illustrated in the typical motor protection curve (Figure 1), the IQ 1000 II provides a cost effective alternative to many conventional protective relays, including short and long time current relays, instantaneous overcurrent relays, ground fault relays, and more. Metered data displayed by the IQ 1000 II includes current, motor temperature (optional), motor starts, and run time. Metered data just prior to a trip is also stored in the IQ 1000 II, providing a "picture" of the motor conditions when the trip occurred. This information can be invaluable in troubleshooting and resolving motor trips. This data is available on the IQ 1000 II's built-in display and remotely using IMPACC.

IQ-1000 II Motor Protection Curve (without RTDs)





**IQ 1000 II Protection Features**

- Locked rotor current (Device 51)①
- Ultimate trip current (Device 51)
- Maximum allowable stall time
- I<sup>2</sup>T alarm level (Device 74)
- Instantaneous overcurrent (Device 50)
  - Programmable trip level (0-1600% FLA) and start delay (1-20 cycles)
- Zero sequence ground fault trip (Device 50G/51G)
  - Programmable trip level (1-12 amps), start delay (1-20 cycles) and run delay (0-10 cycles)
- Motor overtemperature trip and alarm (Universal RTD Module with 11 RTD inputs available as an option)
  - Six stator windings (Device 49)
  - Two motor bearings (Device 38)
  - Two load bearings (Device 38)
  - One auxiliary

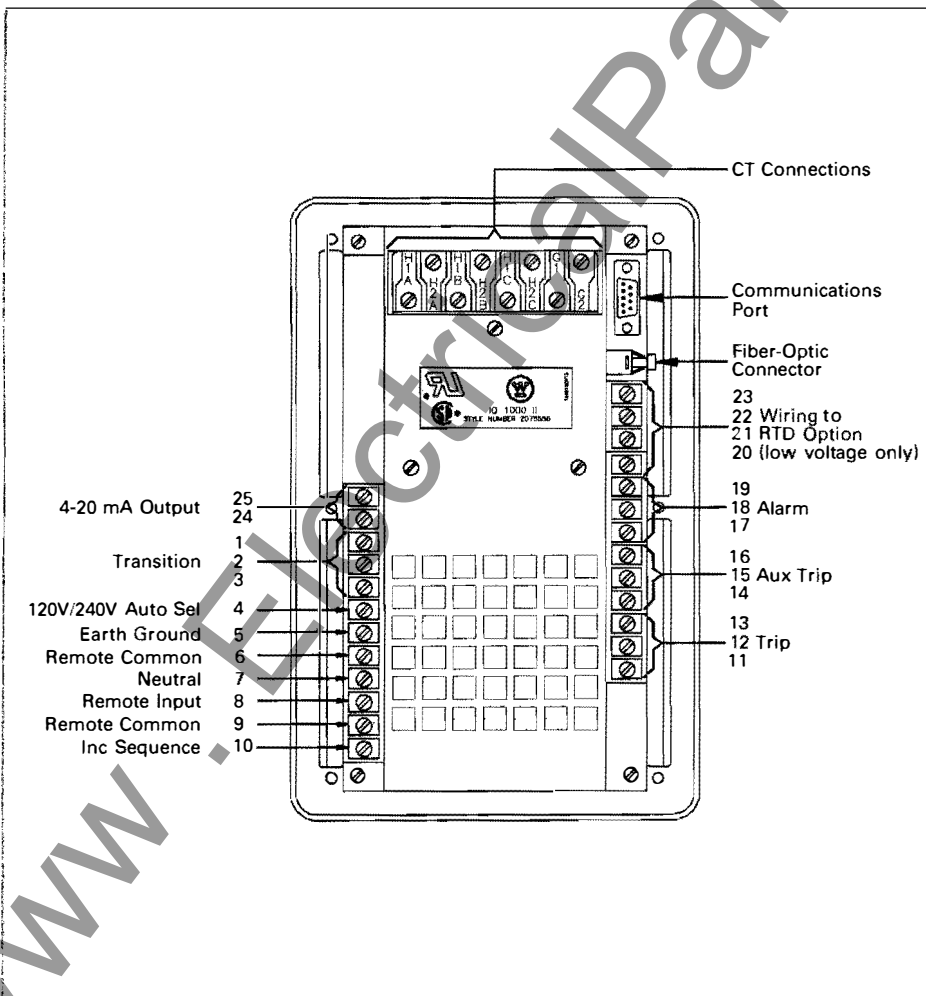
- Jam trip and alarm
  - Separate trip and alarm levels (100-1200% FLA), start delay (0-60 sec.), run delay (0-240 sec.)
- Underload trip and alarm (Device 37)
  - Separate trip and alarm levels (0-90% FLA), start delay (0-100 sec.), run delay (1-10 sec.)
- Phase loss and phase unbalance trip and alarm (Device 46)
  - Programmable alarm (10-50%), run delay (0-240 sec.)
- Number of motor "starts" allowed per time period (Device 66)
  - Programmable starts (0-10 starts), time period (0-240 minutes)
- Anti-backspin time delay
  - Programmable timer (0-600 seconds)
- Transition trip for reduced voltage starters (used with the IQ 1000 II's transition relay feature)

- Incomplete sequence delay (Device 2, 19) (used with the IQ 1000 II's transition relay feature)
  - Programmable timer (1-60 seconds)
- Trip Mode (selectable)
  - Mode 1: Trip relay energizes on trip condition (normal mode for relay operation)
  - Mode 2: Trip relay energizes on power up and de-energizes on trip condition or loss of power
- Phase reversal for non-reversing starters (Device 46)
- Selection of trip, reset, differential trip or motor stop on remote input
- Frequency selection - 50 Hz or 60 Hz
- Selection of auto or manual reset (for I<sup>2</sup>T trip)

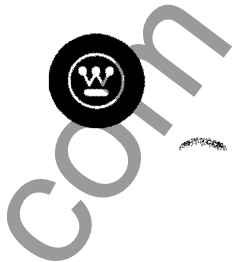
**IQ 1000 II Monitored and Displayed Values**

- Motor current - phase A, B, C, Ground
- Motor current as %FLA for each phase
- Temperature readings from up to 11 RTD inputs (with optional Universal RTD Module)
  - °C or °F selection available②
- Operations count (number of times the motor has been started)
- Run time
- Remaining starts
- Oldest start (time remaining before "oldest" start is restored to "remaining" starts)
- Highest phase current
- Highest winding temperature
- Number of trips on:
  - I<sup>2</sup>T
  - Instantaneous overcurrent
  - Underload
  - Jam
  - Ground fault
  - RTD
- Motor current, (optional) temperature, run time, and operations count at time of trip
  - Values held in memory after Reset②
- Device address (if networked to IMPACC)
- %I<sup>2</sup>T trip level

**Rear View**



① IEE recommended device number  
 ② Enhancements as of October 1992



## IQ 1000 II Inputs and Outputs

### Inputs

- 120 or 240 VAC (autoselecting)
- Remote 120 VAC input programmable for one of the following:
  - Trip
  - Reset
  - Differential trip
  - Motor stop
- Incomplete sequence (contact closure report back for sequencing applications)
- RTD inputs from optional Universal RTD module (3 wire or fiber optic link)
- Three current transformer connections for phase currents, programmable for the following CT ratios:

10:5	100:5	400:5	1500:5
20:5	125:5	500:5	2000:5
25:5	150:5	600:5	2500:5
40:5	200:5	800:5	3000:5
50:5	250:5	1000:5	4000:5
75:5	300:5	1200:5	
- One 50:5 zero sequence ground fault CT for ground fault protection

### Outputs: Four Form C relays

- Alarm relay (Device 74)●
- Trip relay (Device 86)
- Auxiliary trip relay – programmable (Device 86 or 74)
- Transition relay (Device 48)
  - For reduced voltage starters – offers a smooth transition to full voltage based on current with trip or transition on backup timer

### Outputs: Communications

- 4-20 mA output. Maximum output (20 mA) programmable for one of the following
  - 100% FLA
  - 125% FLA
  - Trip level for motor winding RTDs
  - 100% I<sup>2</sup>T trip level
- Communications is achieved through an addressable communications module (PONI) that is easily field mountable on the back of the IQ 1000 II. Local communications can be accomplished over IMPACC or an RS232C protocol. Off-site monitoring can be achieved using telephone modems.

### Customer Benefits

- Easy to order, stock, and use – only one style of the IQ 1000 II is necessary regardless of power requirements or input/output needs. One style of the Universal RTD Module works with virtually any motor RTD.
- Tailors a motor protection curve to a particular motor, providing maximum motor utilization that virtually eliminates nuisance tripping.
- Uniquely calculates the actual positive and negative sequence currents, which leads to an accurate calculation of percent of thermal overload.
- Selectable motor service factor – allows for more flexibility in motor usage and efficiency
- Reduced downtime – protection set points can be changed (with key lock security switch) while the motor is running.② This feature may be disabled.
- Provides a cost effective alternative to the following relays, timers, and meters:
  - Long and short delay current relays
  - Instantaneous overcurrent relays
  - Phase loss or phase unbalance relays
  - Underload and jam relays
  - Transition time-delay relays for reduced voltage starter applications
  - Antibackspin timers
  - Incomplete sequence timers
  - Ammeters and switches
  - Elapsed time meters
  - Temperature meters (with optional Universal RTD Module)
- Saves panel space – single, compact, standard, door-mounted design simplifies ordering, inventory and panel layout.
- User friendly – incorporates a “HELP” feature, making programming and monitoring easy for the OEM and user. Program set points can be scrolled up or down.②
- Programmable alarm relay – warns of a pending trip condition
- Programmable auxiliary trip relay – activates on a user-selected field trip condition
- Selectable manual or automatic reset from an I<sup>2</sup>T trip
- Programmable starts per time – prolongs motor life

- Programmable jam function – provides “load” protection for applications such as conveyors and rock crushers
- Programmable underload function – provides response to load problems such as broken belts, drives, or motor shafts, or the loss of affluent in a pumping system
- Provides a “snapshot” of all monitored values immediately prior to the trip, providing valuable troubleshooting/maintenance information
- Programmable 4-20 mA analog output – can be programmed to output current or temperature information which is easily monitored by a programmable controller with an analog input card.
- Self-diagnostics – continuously monitors its own vital functions and trips in the event of a failure. A message is displayed to show the failure cause
- Set points stored in nonvolatile memory – battery backup is not required
- Security – a key lock Program/Protection switch allows access only to trained personnel. A restart can be activated in emergency situations
- Single phase test mode for bench testing of most protection features
- NEMA 3R, 12 membrane faceplate – ideal for harsh industrial environments
- Large, 1/2 inch, 8 character LED display for easy viewing in any light source. Display “scrolls” for longer messages
- UL recognized
- CSA certified
- Optional IQ DC Power Supply is available for DC power sources
- Optional IQ 1000 II Drawout case is available for applications where down time is critical

Description	Catalog Number
IQ 1000 II	IQ1000II

① IEEE recommended device number  
② Enhancements as of October 1992



**IQ 1000 II Specifications**

**Input Voltage Supply**  
120 or 240 VAC  
(+ 15%, -30%)

**Frequency**  
50 or 60 Hz  
(selectable)

**Power Consumption**  
IQ-1000 II: 11 VA  
Universal RTD Option: 6 VA  
Communications Card: 1 VA

**Output Contact Rating**  
10 A @ 240 VAC (Resistive)  
10 A @ 30 VDC (Resistive)

**4-20 mA Output Rating**  
1000 ohm (Maximum Load Impedance)

**Current Transformer Burden**  
0.003 VA

**Operating Temperature**  
0° to 70° C  
(32° to 158° F)

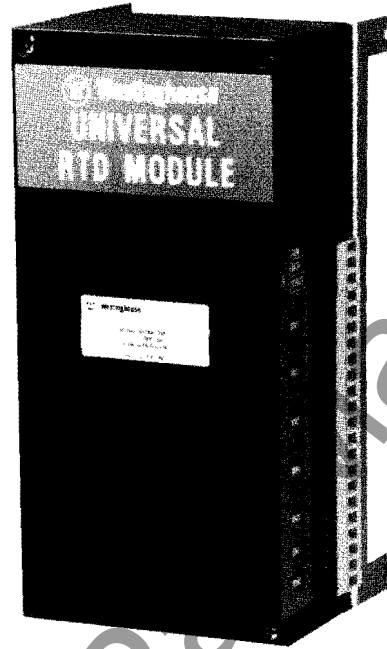
**Storage Temperature**  
-20° to 85° C  
(-4° to 185° F)

**Humidity**  
0 to 95% (noncondensing)

**Dimensions**  
Height = 10.25 in. (26.04 cm)  
Width = 6.72 in. (17.07 cm)  
Depth = 3.20 in. (8.13 cm) - IQ 1000 II only  
4.39 in. (1.15 cm) - with comm. option  
5.05 in. (12.83 cm) - with RTD option  
mounted on device  
6.25 in. (15.88 cm) - with RTD and comm.  
options

**Shipping Weight**  
7 lbs (15.4 kg)

**Universal RTD Module Option**



For applications requiring the monitoring of motor temperature, the Universal RTD Module is available. The Universal RTD Module is an electronic resistance temperature detector monitor for up to 11 RTD inputs - four groups consisting of six motor windings, two motor bearings, two load bearings, and one auxiliary RTD input.

The Universal RTD Module can be programmed to accept any of the following types of RTD inputs:

- \* 10 ohm copper
- \* 100 ohm platinum
- \* 100 ohm nickel
- \* 120 ohm nickel

The type of RTD input can be selected for each of the four RTD groups. For example, the winding RTD inputs can be programmed for one RTD type (e.g., 10 ohm copper), while the motor bearing RTD inputs can be programmed for another RTD type (e.g., 120 ohm nickel).

The Universal RTD Module's small size allows for greater mounting flexibility. It can be mounted directly on the IQ 1000 II, or at a remote location closer to the motor. It transmits information to the IQ 1000 II via a 3 conductor shielded cable, with a maximum cable distance of 500 feet (152 m), or via a fiber optic link, with a maximum distance of 400 feet (122 m).

Used in conjunction with the IQ 1000 II, the Universal RTD Module aids in maximizing motor utilization by avoiding unnecessary nuisance tripping.

With an optional Product Operated Interface (PONI) card, the Universal RTD Module becomes a stand-alone device on the IMPACC network. The Universal RTD Module will monitor and communicate temperature back to the remote master control station.

Like all IQ products, the Universal RTD Module can be found purchased separately or as part of a Westinghouse assembly. It is sold in Westinghouse switchgear, switchboards, motor control centers, and motor starters.

Description	Catalog Number
Universal RTD Module	URTD

**Technical Specifications**

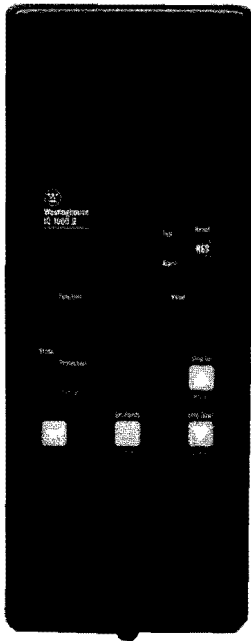
**Input Power**  
120 VAC

**Frequency**  
50 or 60 Hz

**Power Consumption**  
6 VA

**Operating Temperature**  
0° to 70° C

**Dimensions**  
7.7" x 4.3" x 2.0"



**IQ 1000 II Drawout Option**

For applications where down time is critical, the IQ 1000 II Drawout is available. The IQ 1000 II Drawout adds the benefit of exchanging units while power is still applied to the system.

The drawout case fits an FT-32 cutout and can be mounted anywhere that standard units are mounted.

The dimensions of the IQ 1000 II unit (chassis) are slightly different than the standard unit. When ordering, the drawout case and the unit can be ordered together. For IQ 1000 II Drawout replacements, an IQ 1000 II Drawout chassis (only) can be ordered separately.

**Description**

IQ 1000 II Drawout,  
with Case  
IQ 1000 II Drawout,  
Chassis Only

**Catalog Number**

IQ1000IIDO  
IQ1000IID

**Technical Specifications**

**Input Supply Voltage**  
120 or 240 VAC

**Frequency**  
50 or 60 Hz

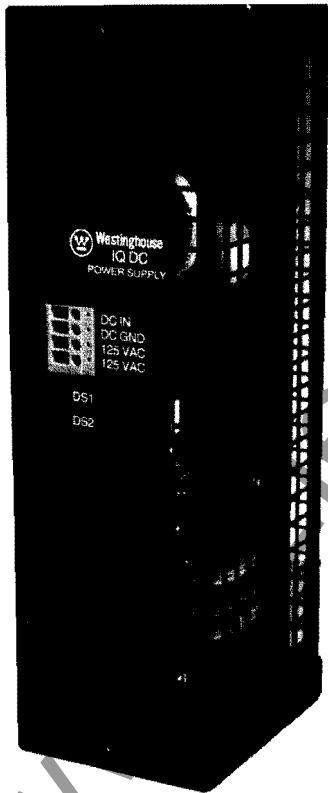
**Power Consumption**  
12 VA

**Output Contact Rating**  
10 A @ 240 VAC (Resistive)  
10 A @ 30 VDC (Resistive)

**Current Transformer Burden**  
0.003 VA

**Operating Temperature**  
0° to 70° C

**Dimensions**  
16.5"x6.4"x7.7"



**IQ DC Power Supply**

The IQ DC Power Supply is a DC to AC inverter module intended for use where only DC is available to power IQ devices. It has a rated power output of 30 VA. It will operate multiple IQ devices requiring no more than a total of 30 VA of power at any power factor.

Input voltage of 40 to 250 VDC is required from a single, two-wire input. There is no need to set switches or adjust jumpers.

There are only four connections – two for DC power in, two for AC power out. The AC output is isolated from incoming power.

Two LEDs indicate a normal or overload condition. Built-in protection features protect against short circuits while providing ample power to start loads with high inrush currents. However, the IQ DC Power Supply may not be suitable for energizing devices requiring higher inrush currents (e.g., contactors and relays).

The IQ DC Power Supply can be purchased separately, or in a Westinghouse assembly – such as switchgear and motor starters.

**Description**

IQ DC Power  
Supply

**Catalog Number**

IQDCPS

**Technical Specifications**

**Supply Voltage**  
40 to 250 VDC

**Output Rating**  
125 VAC (Nominal)  
Square Wave, 60 Hz

**Power Output**  
30 VA, at any power factor

**Operating Temperature**  
0° to 70° C

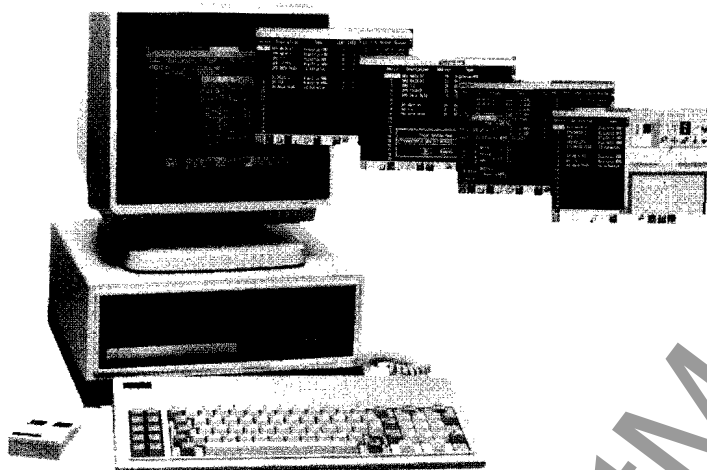
**Maximum Lead Length**  
Input: 35 ft of #14 AWG  
Output: 100 ft of #14 AWG

**Peak Output Current**  
1 A

**Dimensions**  
10.0"x2.9"x3.8"



## IMPACC Communications Option



All IQ 1000 II data, including trip data, can be transmitted to a system master (e.g. personal computer or programmable controller) over IMPACC, Westinghouse's low cost local area network.

IMPACC – Integrated Monitoring, Protection and Control Communications – centralizes information from electrical distribution equipment such as switchgear, motor control centers, and medium voltage starters via IMPACC compatible devices to enhance the performance of a facility's electrical distribution. See page 12 for a list of Westinghouse's IMPACC compatible devices.

Due to the centralization of data, an IMPACC system eliminates the need to individually read, record, and compile data from electrical distribution assemblies and equipment.

Energy management functions such as tracking peak demand, load currents, and power factor can also be provided by IMPACC.

IMPACC utilizes electrical monitoring, metering, and protection devices as data gathering tools, adds digital communications capabilities, and links all devices to a central personal computer or a programmable logic controller which acts as the IMPACC system master control or monitoring unit.

The result is a communications system which accumulates and processes data from as many as 1,000 different compatible devices – data which can be used to monitor, protect, and control manufacturing or building management systems more productively.

Compatible devices can be located as far from the controlling computer as 7500 feet using twisted pair wire without repeaters. If the data is transmitted over telephone circuits, there is no distance limitation.

Its flexibility means that IMPACC communications can be added at a later date in virtually any electrical distribution system that uses IMPACC compatible devices.

Communications is achieved through a small, addressable communications (PONI) card. This Product Operated Network Interface is field mountable to the back of the IQ 1000 II. It can easily be retrofitted on any existing compatible device at any time.

### Series I

Provided with the software package is a Computer Operated Network Interface (CONI) expansion card that houses an INCOM chip necessary for communications with compatible devices on the IMPACC system.

Series I also provides the capability for on-site remote communications with the IMPACC system master control unit. This master control unit may be located remotely and connected to compatible devices via a telephone modem and Master INCOM Network Translator II (MINT II) unit. This allows for the capability of tying together multiple buildings and remotely monitoring the electrical distribution systems of each building in a central location.

Other Series I features include:

- Time/event logging
- Device alarm/trip status logging
- Information storage and retrieval by device events
- Hardware diagnostics

### Series III

Series III is a software program with user friendly, menu-driven screens that permit easy set-up and operation. An IBM (or approved compatible) personal computer acts as the system's master control unit.

Series III can also provide monitoring and recording of vital system data as it is occurring. This data can be collected and displayed at the IMPACC master control unit; or it can be stored in data base format for custom report generation.

Features include:

- System/device alarm logging and reporting
- Time/event data logging and trend recording
- Information storage and retrieval by device event
- Hardware diagnostics
- Dedicated computer not required
- Security code protection
- Gateway Interface

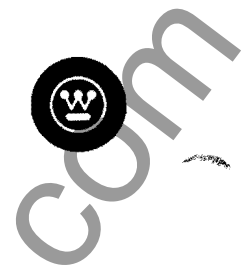
### Enhanced Graphics

The Enhanced Graphics software program adds the capabilities of generating custom animated color graphics and networking multiple computers to the Series III software. With Enhanced Graphics, Series III users can create customized one-line drawings of their electrical power distribution systems, and view those drawings on a remote computer or on the same computer running Series III. Real-time information can be displayed from the devices on the IMPACC network.

Other third party software packages that interface with Series III include Iconic's GENESIS, Intellution's FIX DMACS, and Expert Edge's ROCKY.

### IMPACC Connectivity

The IMPACC network can interface with other PLCs and DCS networks using a Master INCOM Network Translator (MINT II). The MINT II translates IMPACC communications to and from RS232, enabling a device with an RS232 port to function as the IMPACC master control unit.



**IQ Custom Protection Curve**

The IQ Custom Protection Curve gives a customer the opportunity to view motor protection curves generated by the IQ 1000 II's algorithm. The IQ CPC is a software program that draws a motor protection curve based upon user-set parameters. In essence, it demonstrates the "tailoring" ability of the IQ 1000 II. The user is able to edit the parameters and view the results. Data can be saved as well as printed on most standard printers.

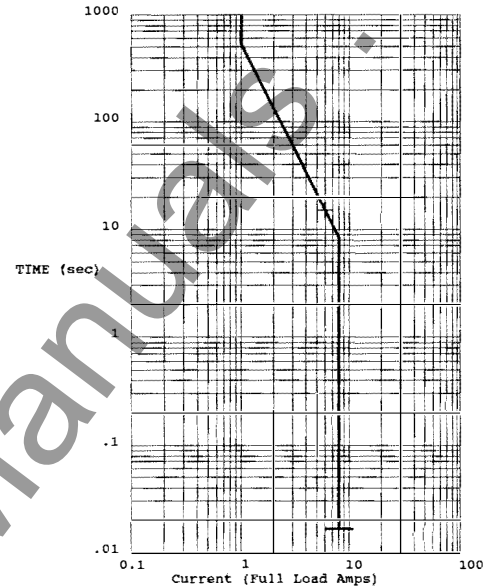
**Description**

IQ Custom Protection Curve

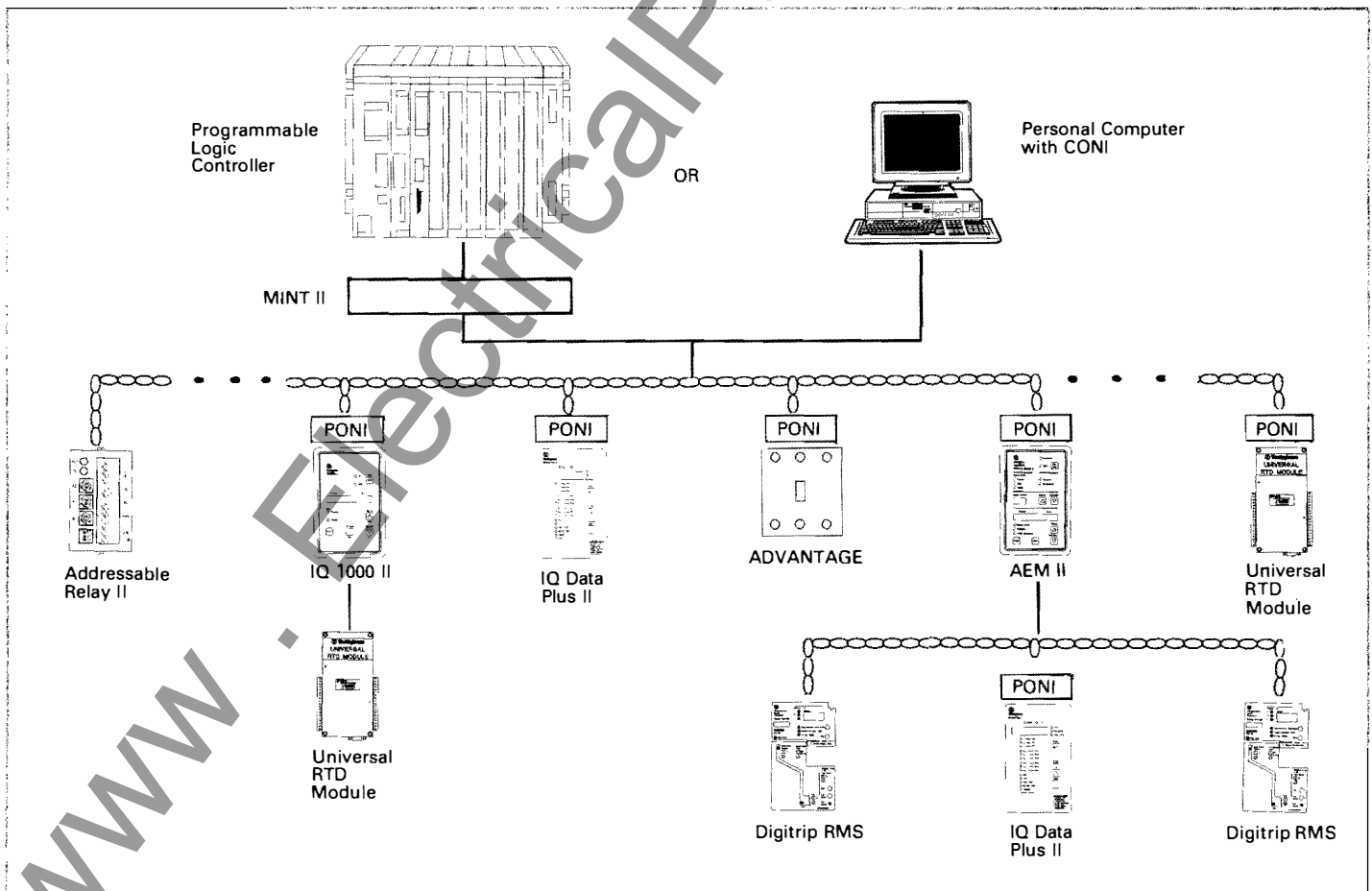
**Catalog Number**  
IQPCP

**Parameter Settings**

- Instantaneous Overcurrent: 08.00  
(As a Multiple of FLA)
- IOC Start Delay: 1  
(In Cycles)
- Locked Rotor Current: 06.00  
(As a Multiple of FLA)
- Ultimate Trip Current: 1.00  
(As a Multiple of FLA)
- Cold Start Stall Time: 15  
(In Seconds)
- AC Line Frequency: 60  
(In Hz)
- Jam Trip Current: 12.00  
(As a Multiple of FLA)
- Jam Start Delay: 60  
(In Seconds)
- Jam Run Delay: 240  
(In Seconds)
- Underload Trip Current: 0.00  
(As a Multiple of FLA)
- Underload Start Delay: 100  
(In Seconds)
- Underload Run Delay: 10  
(In Seconds)



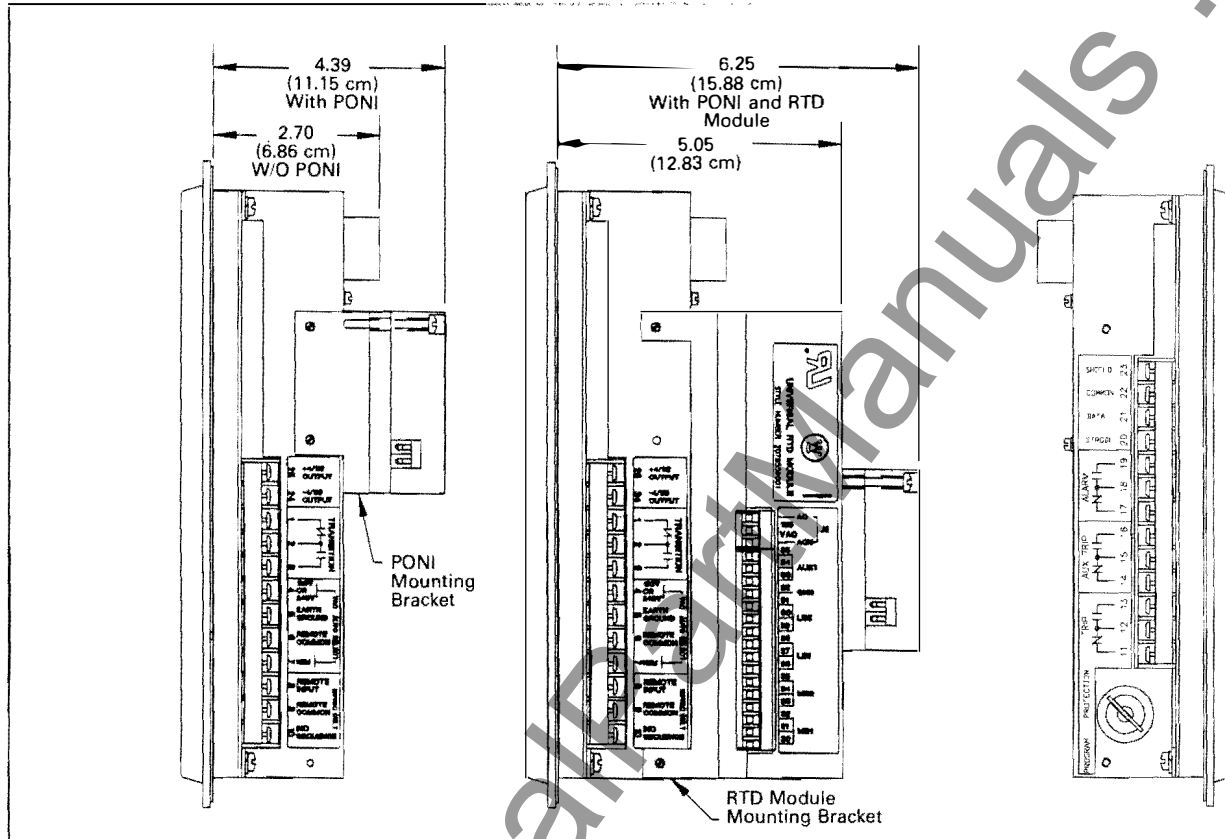
**Networking**



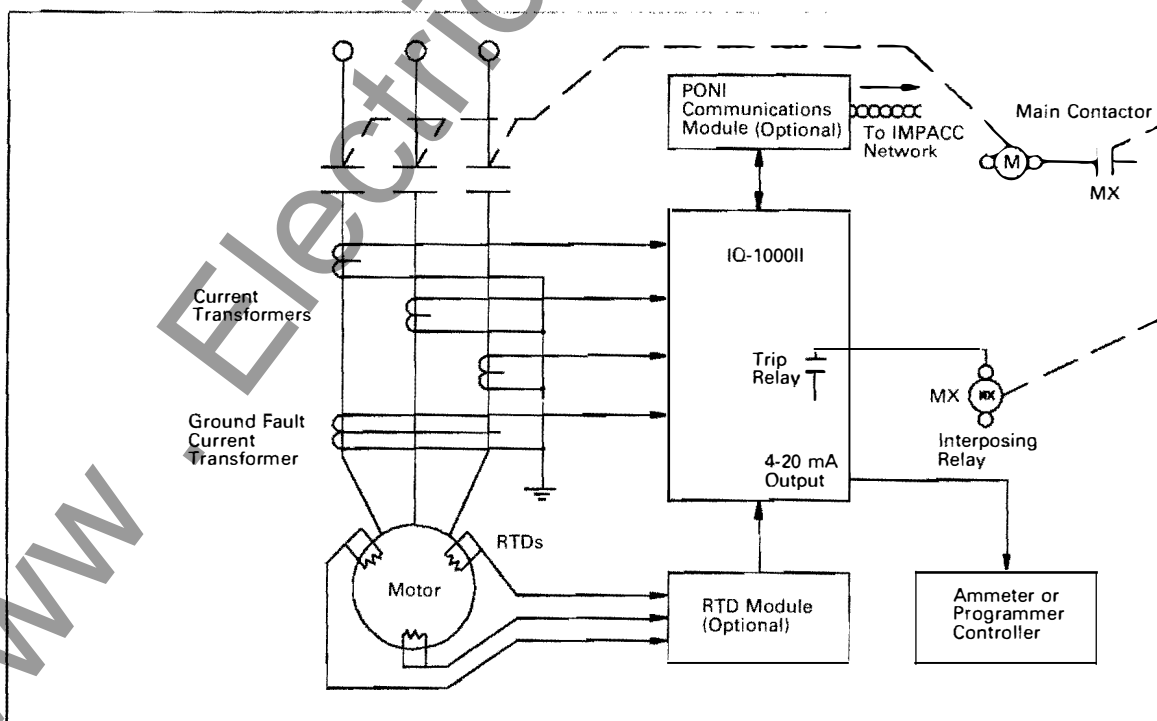




### Dimensions

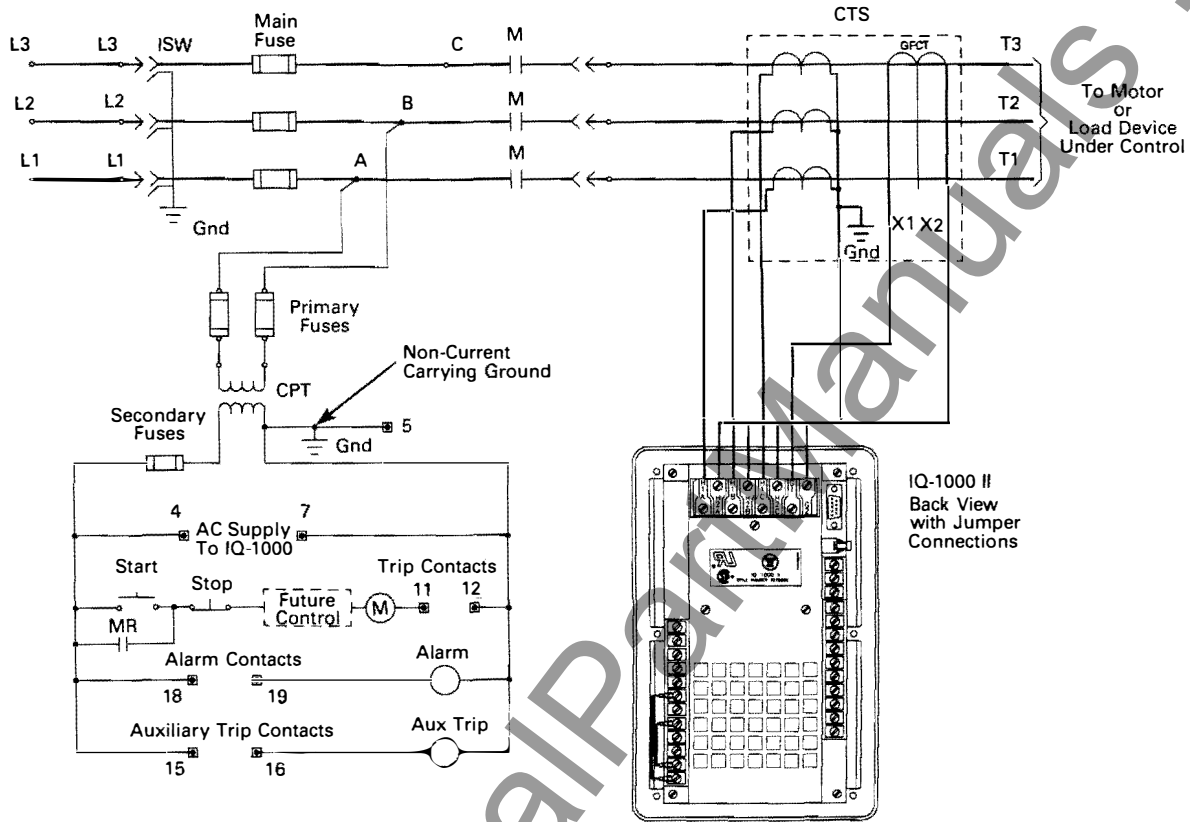


### Field Wiring Connections

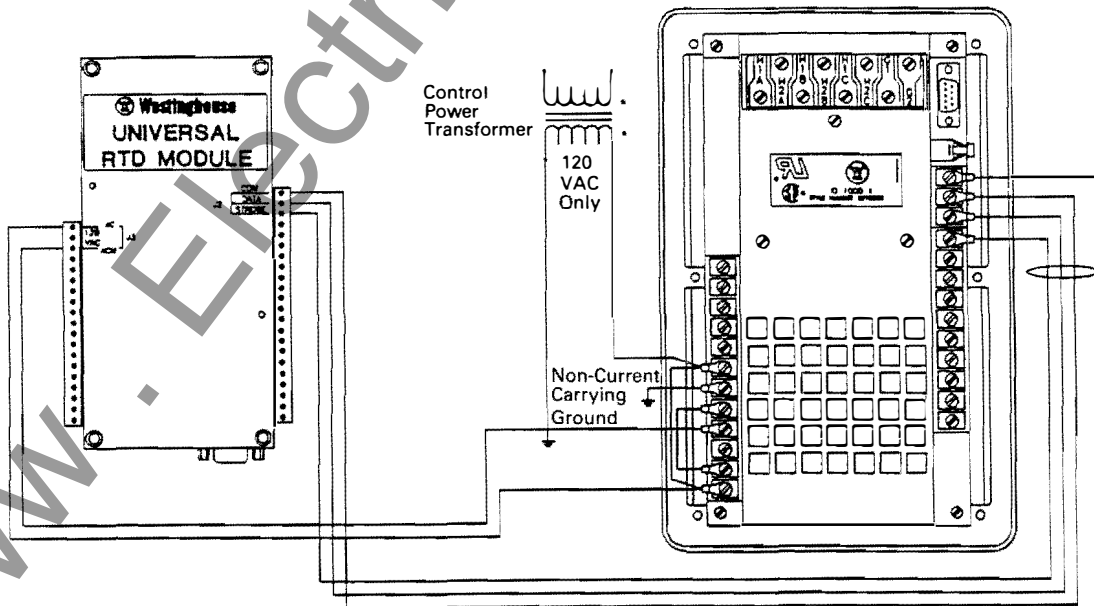




**Wiring Plan Drawing (Typical, Mode I)**



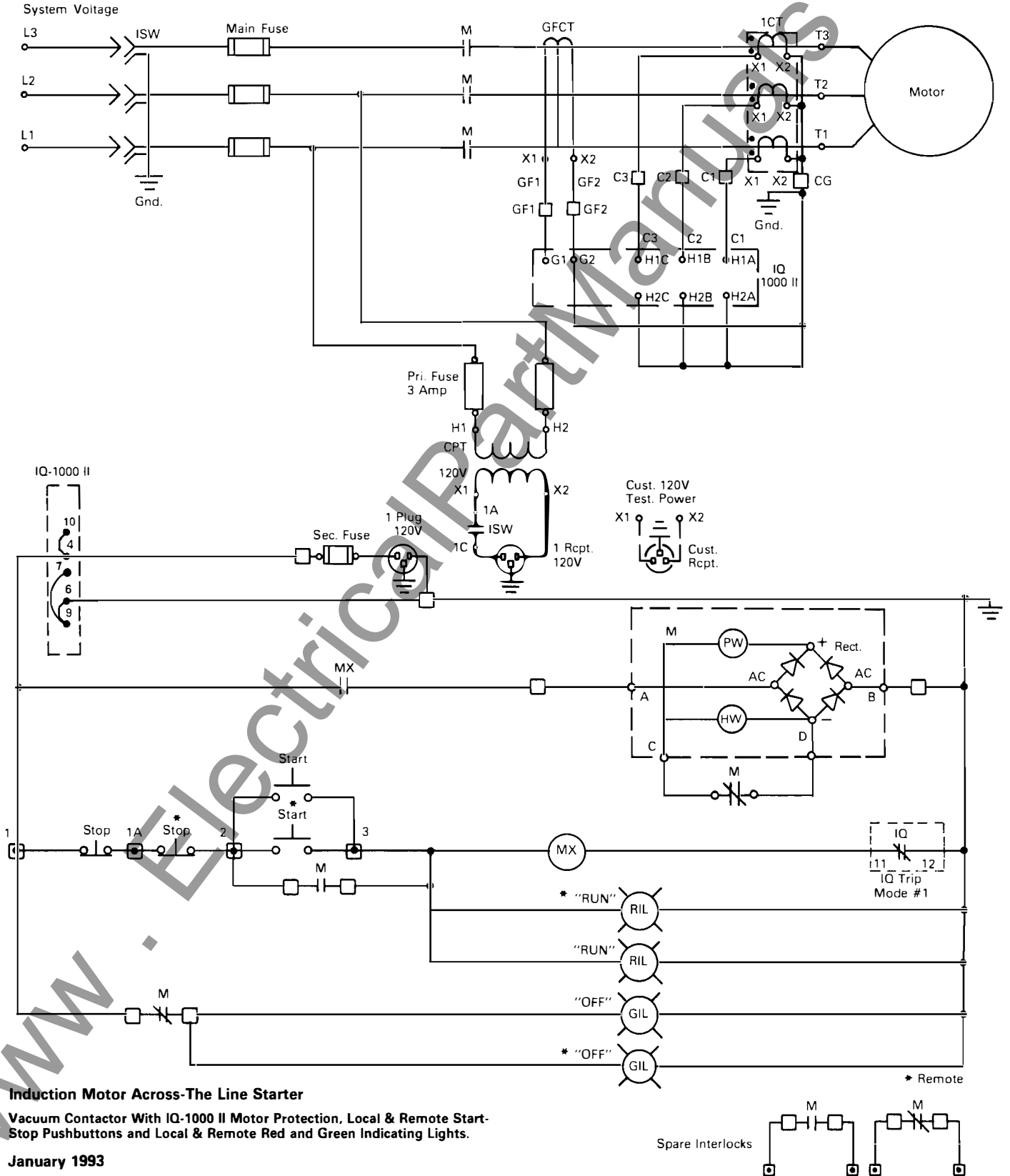
**Connection Between IQ 1000 II and Universal RTD Module**





### Applying an IQ 1000 II in an AMPGARD Medium Voltage Starter (Typical Control Schematic)

#### Typical Diagram for Vacuum Type SJ Contactor



Induction Motor Across-The Line Starter

Vacuum Contactor With IQ-1000 II Motor Protection, Local & Remote Start-Stop Pushbuttons and Local & Remote Red and Green Indicating Lights.

January 1993

Spare Interlocks



**Product Support**

**Application Support**

Westinghouse sales offices world-wide provide technical assistance in the specification and use of Westinghouse IQ products.

**Factory Assistance**

Westinghouse provides factory applications and technical assistance to its customers. Available by telephone, Westinghouse personnel quickly respond to customer needs — troubleshooting problems, analyzing system operation, and coordinating component repair or replacement.

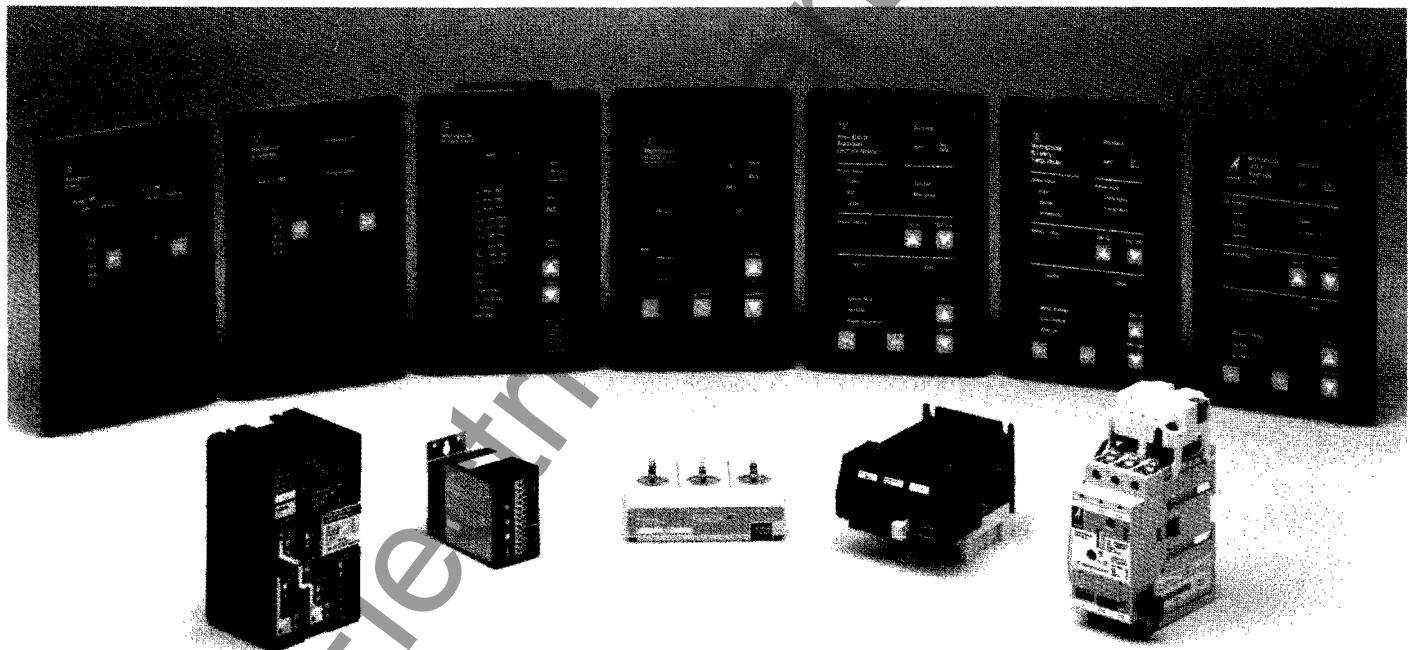
Factory assistance may be obtained by calling the Advanced Products Support Center (800) 542-7883 or (412) 937-6790.

**Training**

Westinghouse also provides comprehensive training on IMPACC and IMPACC compatible devices from its Pittsburgh Training Center. The Training Center also offers on-site training for all of its courses. For more information on training, please call (412) 937-6270.

**Further Information**

List Prices	
IQ Products and IMPACC	PL 8174
Other IQ Products and IMPACC Compatible Devices	
IQ 500	CS 8177
IQ Data	DB 8171
IQ Generator	DB 8172
IQ Energy Sentinel and IQ Central Energy Display	DB 8178
IQ Data Plus II	DB 8170
IQ Data Plus II HV	DB 8176
Assemblies Electronic Monitor II	DB 8175
ADVANTAGE Motor Starters	CS 8226
Digitrip RMS	SA 11723A
IMPACC Electronic Brochure	SA 11893
IMPACC	SA 11670



Westinghouse Electric Corporation  
Distribution and Control Business Unit  
Electrical Components Division  
Pittsburgh, Pennsylvania, U.S.A. 15220