



Cutler-Hammer

IQ 100 Meter

Technical Data

New Information

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IQ 110



IQ 115

IQ 100 Meter

General Description

Eaton's Cutler-Hammer IQ 100 is designed for basic feeder applications where minimal data is required by the end user. This simple-to-use meter provides accurate measurement and displays up to 12 electrical parameters including average voltage and current for the system, plus line-to-line and line-to-neutral measurements. As an option, frequency can also be monitored. The IQ 100 has programmable voltage and current transformer ratios and true rms indication for accurate measurement of distorted waveforms, which can be viewed through four screens via a high visibility LED display. The IQ 100 is an invaluable tool for all power monitoring applications.

There are two models in the IQ 100 series of meters. The IQ 110 models provide voltage and current measurement only. The IQ 115 models provide frequency monitoring in addition to voltage and current measurement. All other characteristics are identical in all meters in the IQ 100 series.

Low Cost Meter

The IQ 100 family includes a series of simple meters that monitors voltage, current and frequency and is used in a wide variety of applications where the local display of these values is desired.

Applications

- Local display of 3-phase voltage and current.
- Optional display of system frequency.
- Typical applications can include:
 - Motor control centers
 - Switchboards
 - Panelboards
 - Switchgear
 - Feeder panels
 - Generator sets
 - Control panels

Metered/Monitored Parameters

- True rms measurement.
- System volts.
- System current.
- For 3-phase, 4-wire systems:
 - Voltage, L-L and L-N
 - Phase currents
- For 3-phase, 3-wire systems:
 - Voltage, L-L
 - Phase currents
- Frequency monitoring available on the IQ 115 series.

Physical Characteristics

- High visibility 3-line LED display.
- Optional display of system frequency.
- ANSI style case.
- Simple menu driven interface.
- Dimensions: 4.31-inch H x 4.31-inch W x 6.7-inch D (109.5 mm H x 10.5 mm W x 170.2 mm D).
- Depth behind panel: 6.04 inches (153.4 mm).
- Display size: 4.31 x 4.31 inches (109.5 mm H x 109.5 mm).
- Panel cutout: 3.98-inch (101.1 mm) diameter, 4 stud positions.
- Faceplate rated IP54.

Auxiliary Supply

Ideally, the IQ 100 series of meters should be powered from a dedicated supply, either 100 – 250 Vac or Vdc or 12 – 48 Vdc. However, the device may be powered from the sensing voltage provided the source remains within the working range of the chosen auxiliary supply.

Specifications

Input

- Nominal input voltage: 57.7 – 346 Vac L-N, 100 – 600 Vac L-L in four ranges.
- Maximum continuous input voltage: 120% nominal.
- Maximum short duration input voltage: 2 times for 1 second, repeated 10 times at 10 second intervals.
- System PT ratios: Up to 400 kV (primary).
- Nominal input voltage burden: < 0.2 VA.
- Nominal input current: 5A (1A option).
- Standard CT primary values: Up to 9999:5A.
- Optional CT primary values: Up to 9999:1A.
- Maximum continuous input current: 120% nominal.
- Maximum short duration current input: 20 x for 1 second, repeated 5 times at 5 second intervals.
- Nominal input current burden: < 0.6 VA.

Auxiliary

- Standard nominal supply voltage 100 V – 250 Vac or Vdc:
 - (85 V – 287 Vac absolute)
 - (85 V – 312 Vdc absolute)
- ac supply frequency range: 45 – 66 Hz.
- ac supply burden: 6 VA.
- Optional auxiliary dc supply 12 V – 48 Vdc:
 - (10.2 V – 60 Vdc absolute)
- dc supply burden: 6 VA.

Measuring Ranges

- Voltage 70 to 120% of nominal:
 - (functional 4 – 120%)
- Current 5 to 120% of nominal:
 - (functional 5 – 120%)
- Frequency 45 to 66 Hz.

Accuracy

- Voltage: ±0.1% of range ±0.4% of reading.
- Current: ±0.1% of range ±0.4% of reading.
- Frequency: 0.15% of mid-frequency.
- Temperature coefficient: 0.013%/°C typical.
- Display update time: 500 mS.

Enclosure

- Enclosure style: ANSI C39.1.
- Compliant with:
 - UL® 140758
 - EC 1010/BSEN 61010-1
- Material: Polycarbonate front and base, steel case.
- Terminals: Barrier terminal strip 6-32 binding head screw.
- Dielectric voltage withstand: Test 3.5 kV rms 50 Hz for 1 minute between all electrical circuits.
- Operating temperature: -20 to +70°C.
- Storage temperature: -30 to +80°C.
- Relative humidity: 0 to 95% non-condensing.
- Warm-up time: 1 minute.
- Shock: 30g in 3 planes.
- Vibration: 10 to 55 Hz, 0.15 mm amplitude.
- Enclosure Integrity: IP54 (front face only).
- Dimensions: 4.31-inch H x 4.31-inch W x 6.7-inch D (109.5 mm H x 109.5 mm W x 170.2 mm D).
- Panel Cutout: 3.98-inch (101.1 mm) diameter, 4 stud positions.

Fusing

It is recommended that 1 ampere fuses be installed on all voltage lines.

Safety/Ground Connections

For safety reasons all CT secondary connections should be grounded in accordance with local regulations.

Wiring

Input connections are made to screw clamp terminals. Terminals for both current and voltage connections are sized to accept two #9 AWG (3 mm²) solid or stranded wires, or ring lug suitable for 6-32 screws.

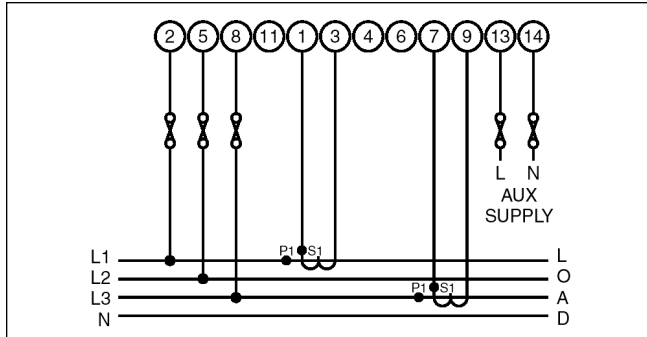


Figure 1. Connection Diagram — 3-Phase, 3-Wire Systems

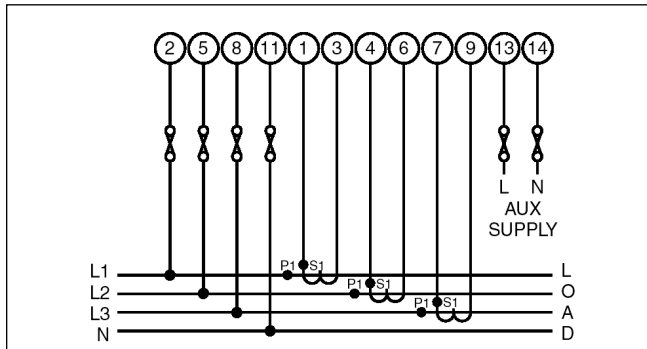


Figure 2. Connection Diagram — 3-Phase, 4-Wire Systems

Programming

All IQ 100 meters are easily programmed, and measured values are displayed using the two pushbuttons on the front panel. All configuration screens can be protected by an optional programmable password.

Display Mode

The IQ 100 displays measured parameters on a 3-line, 4-digit LED display. The displayed parameters appear in the following order.

- Screen 1:
 - System volts
 - System current
 - System frequency (IQ 115 only)
- Screen 2:
 - Volts L1 – N (4-wire only)
 - Volts L2 – N (4-wire only)
 - Volts L3 – N (4-wire only)
- Screen 3:
 - Volts L1 – L2
 - Volts L2 – L3
 - Volts L3 – L1
- Screen 4:
 - Current L1
 - Current L2
 - Current L3

Ordering Information

There are four choices that must be made to determine the correct catalog number for an IQ 100 meter:

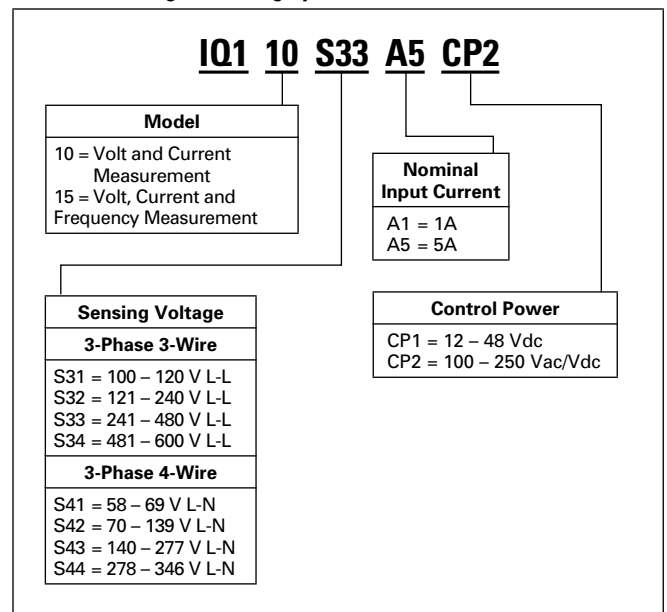
- Frequency measurement.
- System configuration and voltage level.
- Nominal current input.
- Control power.

Catalog numbers of meters without frequency measurement start with IQ 110, and catalog numbers of meters that read frequency start IQ 115. There are also separate catalog numbers for 3-wire (S3) and 4-wire (S4) systems. There are then four voltage level choices for each type of system. The next choice is the nominal current input, 5A or 1A. And finally, the control voltage range is selected; the standard control power supply is dual rated, 100 to 250 volts ac or dc, or the optional dc only power supply that operates on 12 to 48 volts dc.

The following table can be used as a guide to construct a proper catalog number.

How to Construct an IQ 100 Catalog Number

Table 1-1. Catalog Numbering System



An example of a valid catalog number is IQ110S33A5CP2 for a IQ 100 series meter that:

- Measures voltage and current only.
- Operates on a 3-phase, 3-wire system from 241 to 480 V L-L.
- Accepts current from a 5 ampere nominal CT.
- Has a standard 100 to 250 Vac/Vdc power supply.

IQ 100 Dimensions in Inches (mm)

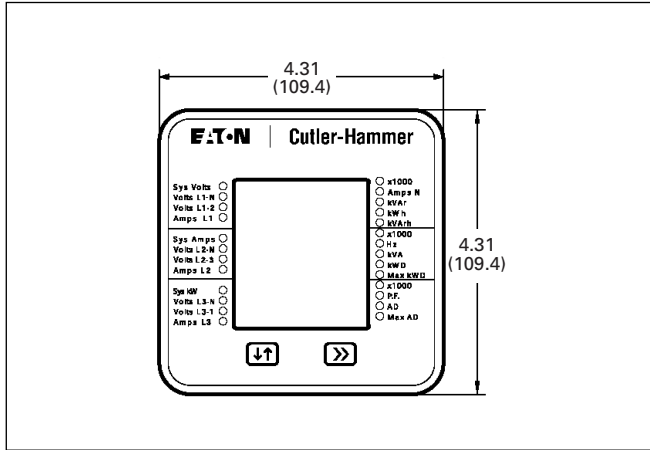


Figure 3. IQ 100 Faceplate

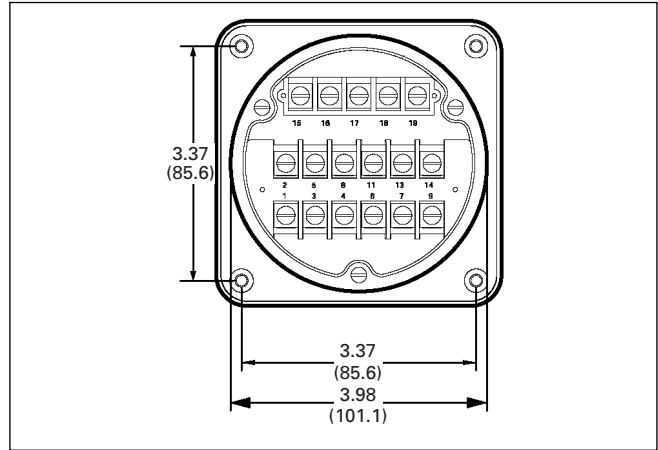


Figure 5. IQ 100 Rear View

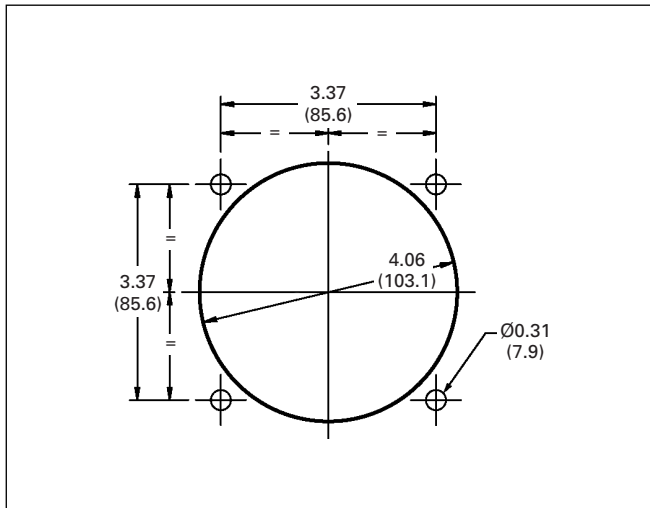


Figure 4. IQ 100 Cutout

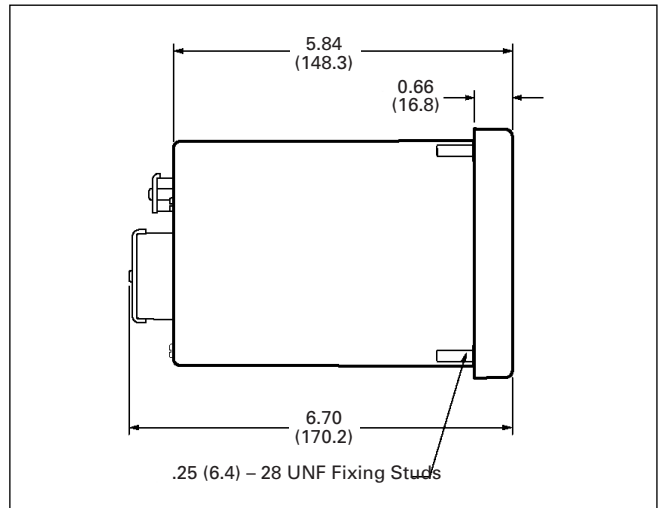


Figure 6. IQ 100 Side View

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