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# Ci20 Electric Revenue Meter

FOR ADVANCED METER APPLICATIONS

## REVENUE METER

AMETEK's Ci20 Revenue Meter watches over your energy investment in many ways. It has high accuracy measurements, site diagnostics and dependable communication options to ensure maximum reliability. Your installation investment is reduced with our innovative software wizard that provides quick set-up and configuration. Inventory and ordering is simplified with field up gradeable options using soft switches and plug in boards.

### **High Accuracy Measurements**

The AMETEK Ci20 provides an impressive 0.15% accuracy on watt-hours with additional improvements from Transformer Correction and TLC measurements. Per phase and system measurements are available including Four Quadrant and Bidirectional. The AMETEK Ci20 comes with 4 channels of Load Profile, upgradeable to 12 channels

### **Multiple Communication Choices**

The Ci20 can be equipped with dual serial outputs, or single serial output with Modem or Ethernet ports. A built-in Web server provides secure access of measurements using a standard Web browser. Support is provided for DNP, Modbus, ANSI tables and MV90.

### **Quick Installation and Upgrades**

The Windows based JEMWARE software configuration wizard reduces configuration time and minimizes errors with the step by step process. Options can be easily added via soft switch or plug in option boards. A universal form option provides access to multiple 3 phase circuit connections in one meter configuration. Order one standard configuration and upgrade it easily at your site to support any installation needs.

### **Graphic Display**

The Ci20 has a large easy to read graphic LCD display for displaying any metered value, health status, alarms and general operation. The secure menu driven display provides access to your meter configurations for quick changes.

# AMETEK

POWER INSTRUMENTS



### **Site Diagnostics**

The AMETEK Ci20 will determine whether the meter is properly connected through the Installation Verification mode, which displays the per phase measurements and phase vectors on the graphic LCD display. Once installed, the Ci20 continuously checks the operating conditions against pre-set thresholds with alarms triggered

### **Continuous Power**

The Ci20 will operate off any phase, preventing a loss of recording when one or two phases are dropped. Combined with the site monitoring feature, notification of this event can be provided via automatic modem call, alarm contact and meter reads.

### **Digital I/O**

The Ci20 has 6 channels that can be selected as configurable inputs or KYZ outputs. The inputs can also be wetted through our internal isolated supply.

### **Power Quality**

The Ci20 can monitor and report your site's power quality conditions with sag and swell recording, THD, power factor, imbalance and frequency measurements.

### **Totalization**

With up to 6 configurable inputs, you can totalize a variety of measurements providing a consolidated output.

## SPECIFICATIONS

### METER FORMS

Meter Forms: 5, 6, 8, 9, 26, 35S, Universal

### INPUTS

#### Voltage

- 55-530 VAC auto-ranging
- Burden\*: 0.5 VA @ 530V
- \*Does not include auxiliary power requirements.

#### Current

- 10 Amps: ANSI Class 20
- Burden: 0.5 VA maximum
- Overload: 1.5x rated class current continuous, 20x rated class current for 0.50 sec
- Frequency range: 45-55 Hz, 55-65 Hz

### AUXILIARY POWER

#### 55 - 530 VAC

- Derived from from A,B or C phase voltage input
- Auxiliary Power Burden**
- 15 VA maximum

### ACCURACY

#### Watthour

- 0.15% reading

#### Clock

- Synchronized to line or +3 minutes per month maximum error

### MEASUREMENT PLUS

Additional 15 or 35 Measurements (Base Meter Includes 15)

### PER PHASE MEASUREMENT

#### Energy Per Phase Quantities

- Watthour, VARhour, VAhour Amphour, Amp<sup>2</sup>hour,
- Volt<sup>2</sup>hour, Qhour

#### Instantaneous Per Phase Quantities

- Watts, VARs, Quadrant Vars, VA, Q, PF, Volts, Amps, Neutral Current, Volts<sup>2</sup>, Amps<sup>2</sup>

### TIME OF USE

9 Rates, 20 Year Calendar

### SITE MONITORING

Set Alarms for Under/Over Voltage and Current, Power Factor. Trigger an Alarm Contact or Phone any Number

### DEMAND PREDICTION

Determines in Advance When Demand will Exceed Pre-set Threshold

### LOAD PROFILE +

12 Channels of Storage (61 Days @ 15 Minute Intervals)

### ALARM THRESHOLDS

Set Alarms for any Energy or Instantaneous Measurement Trigger an Alarm Contact or Phone any Number

## MEASUREMENTS

### Energy PolyPhase Quantities

- Watthour, VARhour, VAhour, Amphour, Amp<sup>2</sup>hour, Volt<sup>2</sup>hour, Qhour

### Instantaneous Quantities

- System: Watts, VARs, Quadrant Vars, VA, Q, PF, Volts, Amps, Amps<sup>2</sup>, Average Volts,

### 4 Quadrant Bi-Directional

## REGISTERS

### 15 Normal or Alternate Using Any

#### Measurements Above

#### Demand Registers

- Fixed or sliding window
- Interval length: 1-60

## LOAD PROFILE

### 4 Channels of Storage (Standard)

#### Programmable Interval

- 1-60 minutes

### 64 Days Storage Using Four Channels at 15-minute Intervals

## MECHANICAL

### Case Styles

- S base and A Base

### Size and Weight

- S base: 4.5 pounds
- A-base: 6.5 pounds

## COMMUNICATIONS

### Optical Port (Standard)

- Type 2- 19,200 Baud
- JEM Binary

## ENVIRONMENT

### Operating Temperature

- -22<sup>o</sup>to 185<sup>o</sup>F(-30<sup>o</sup> to 85<sup>o</sup>C)

### Storage Temperature

- -40<sup>o</sup>to 185<sup>o</sup>F (-40<sup>o</sup> to 85<sup>o</sup>C)

### Humidity

- 5 to 95% relative humidity, non-condensing

### Surge Withstand (SWC)

- ANSI Standard C62.41

### Fast Transient

- 4kV inputs, 2kV I/O (IEC 61000-4-4)

### EMC

- FCC Part 15, Class B, FCC Part 68

## STANDARDS

### Agency Standards and Certifications:

- ANSI Standard C12.1-2001
- ANSI Standard C12.18-1996
- ANSI Standard C12.19-1997
- ANSI Standard C12.20-2002
- Measurement Canada

## METER OPTIONS AND UPGRADES

### COMMUNICATIONS

One Comm option board per meter

#### Serial Port Board

- Single or dual serial port
- Field selectable for RS-232 or RS-485
- User configurable: 300 to 38400 baud

#### Internal Modem Board

- 2,400 baud
- With optional serial port (RS-232/485)
- With optional phone home on power fail

#### Ethernet Board

- 10 baseT, unshielded twisted pair
- Up to 4 simultaneous connections
- With optional serial port (RS-232/485)

#### Communication Protocols

- Modbus ASCII, RTU, TCP/IP
- DNP 3.0
- ANSI Tables C12.19

#### TOTALIZATION

Up to 6 Contact Inputs (from Digital Input/Output Board)

Up to 12 Totalization Measurements

Displayed and Recorded

#### Web Browser

- View power measurements and site conditions from a standard Web browser.

### EXTERNAL AUX POWER

Can be powered externally with 55-530VAC or 90-250VDC

### INPUT/OUTPUT BOARD

Six Channels Individually Selectable for a Form-A Contact Input or KYZ Solid state Output.

Contact Inputs (wet or dry)

- User-configurable for: pulse counter, interval synchronization pulse, TOU rate override, status input, totalization

- Customer wetted contact - maximum voltage 40 VDC

- Customer dry contact - optional internally powered 12 VDC

#### Solid-state Outputs

- User-configurable for: any consumption quantity, energy pulse (KYZ), site monitor alarm, threshold

- alarm, demand sync, voltage sag/swell alarm, system error alarm

- Maximum open-circuit voltage: 200 VDC or Peak AC

- Maximum switching current: 50 mA

### POWER QUALITY

Configurable Thresholds for Voltage Sags and Swells per Phase

Records Start and Duration in Cycles Records Min/Max/Avg Voltage and Current per Phase, Avg Power Factor

Stores Up to 100 Events

Maximum Event Length of 600 Cycle

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