

JEMStar II High Accuracy Revenue Meter

FOR GENERATION, TRANSMISSION AND INDUSTRIAL POWER MEASUREMENT

HIGH ACCURACY REVENUE METER

The JEMStar II has the highest accuracy in the market, provides many communication options and monitors power quality to make it the ideal choice for any metering application. An impressive color display makes it easy to view power measurements, phasor displays and meter diagnostics. It's easy to use and configure with our intuitive JEMWARE software. The meter has a single base model that can be used for simple revenue and billing applications as well as more complex power quality monitoring applications.

The meters precision design provides high accuracy with long term stability making it easy to guarantee 0.05% accuracy for 10 years. Low current accuracy is better than 0.2% RDG at 50 mA.

The JEMStar II includes security features that meet NERC CIPS requirements. Ethernet connections can be restricted to select IP addresses. Audit logs store all access attempts; including meter connections, configurations, firmware changes and data access with user name and time/date. The audit log requires permission to view and cannot be modified or deleted from the meter.

The meter is easy to configure with intuitive JEMWARE software that includes a Configuration Wizard to guide you through the metering application set-up. The meter includes a built-in USB port that can be used to upload or download meter configurations, upload firmware or retrieve data using a USB memory stick.

FEATURES AND BENEFITS

- 0.05% accuracy for 10 years
- Easy to configure and operate
- Meets NERC CIPS requirements
- Up to eight communication ports available
- Advanced, customizable power quality recordings

AMETEK[®]
POWER INSTRUMENTS



Communications

The Jemstar II can be supplied with up to eight communication ports including:

- Optical port
- (3) Serial ports – RS-232 and RS-485
- Analog or cellular modem port
- (2) Ethernet ports
- WIFI port
- Optical port
- (3) Serial ports – RS-232 and RS-485
- Analog or cellular modem port
- (2) Ethernet ports
- WIFI port

Communication ports support a variety of metering protocols including DNP, Modbus, JEM binary, ANSI tables and IEC-61850 and can operate simultaneously and independently.

The dual independent Ethernet ports have separate IP Addresses so end users can allow access to third parties without breaching their own secure network. Each Ethernet port can be addressed for multiple users and protocols operating simultaneously with permissions given to specified functions.

Site Monitoring

Metering wiring connections can be checked at the meter via a color phasor diagram and alert you when wiring is mis-connected or phase angles exceed pre-set limits.

The JEMStar II can be configured with alarm triggers on any power measurement or digital I/O. Triggered events are available for remote retrieval and triggers can activate power quality recording or alarm an output contact.

Power Quality

The JEMStar II comes with Sag/Swell/Outage recordings that store the time, date, duration and site conditions. For advanced power quality analysis, there is an option to record high speed RMS measurements and selectable waveform data from pre-selected triggers. Harmonic measurements to the 128th with individual harmonics up to the 64th recorded for magnitude and phase angle. Power quality data resides in the meter via PQDIF file format and can be automatically exported for easy analysis with our software or third party applications.

Metering Features and Functions

The JEMStar II has 50 normal and 50 alternate registers that can be shown on the graphical display, listing 1-4 measurements per display screen. The meter can be provided with two independent load profile groups, each with 16 channels at intervals of 1 to 60 minutes. Measurements can be stored in scalable counts or 32 bit engineering units. The meter can record up to 400 different power measurements with intervals selectable from 150/180 cycles to 120 minutes.

Logs can be used for short or long term trending of energy values, min./max./avg. power measurements and harmonics up to the 64th. T

Input/Output Capability

The JEMStar II can be equipped with an internal six channel digital I/O and a four channel analog output module. Each can be selected as either an input or output and has a built-in isolated supply to provide power for inputs.

Power Quality Recordings

Sag/Swell/Outage (standard)	<ul style="list-style-type: none"> Record event time, date, duration Record Phase that triggered Record min/max/avg V, A, Pf, THD
High Speed RMS (optional)	<ul style="list-style-type: none"> Record voltage and current per phase 120Hz recording rate Configurable trigger: pre and post event recording, max 60 second recording per event
Waveform Capture (optional)	<ul style="list-style-type: none"> Record voltage and current per phase 16 samples/cycle recording rate: max 960 cycle recording per event 128 samples/cycle recording rate: max 240 cycles recording per event 512 samples/cycle recording rate: max 30 cycles recording per event Configurable trigger: pre and post event recording
Harmonic Recording (optional)	<ul style="list-style-type: none"> Record individual voltage and current harmonic per phase up to 64th Record magnitude and phase angle
Flicker Measurement (optional)	<ul style="list-style-type: none"> Pst and Plt Pinst (instantaneous)
Measurement Log (optional)	<ul style="list-style-type: none"> 8 logs of 50 measurements each Recording interval: 150/180 cycles to 120 minutes Min/Max/Avg measurements
Trigger Selections (used for alarm logging and PQ recording)	<ul style="list-style-type: none"> Sag/Swell Transient Trigger Rapid Voltage Change Interruptions THD, TDD, Flicker Phase loss, Phase Rotation Any instantaneous measurement (over/under) Digital Inputs

SPECIFICATIONS

METER FORMS

- Meter forms: 5, 6, 8, 9, 45, universal

INPUTS

Voltage

- 55-530 VAC auto-ranging
- Burden¹: 0.5 VA @ 530V

¹Does not include auxiliary power requirements.

Current

- 1 amp: ANSI class 2
- 5 amps: ANSI class 10
- 10 amps: ANSI class 20
- Burden: 0.5 VA maximum
- Overload: 1.5x rated class current continuous
- Starting current: 0.002 A
- Frequency range: 45-55 Hz, 55-65 Hz

AUXILIARY POWER

S-base and A-base

- Self powered via all three phases: 55-530 VAC
- External Aux Power Option: 55-530 VAC or 90-300 VDC; 19-58 VDC

Switchboard

- Aux Power: 55-530 VAC or 90-300 VDC; 19-58 VDC option

Auxiliary Power Burden

- 25 VA maximum

ACCURACY

Watt Hour

- 0.05% reading (0.02% typical)

Volts, Amps

- 0.04% reading

MEASUREMENTS

- Bi-directional, 4 quadrant
- Energy, instantaneous: per phase values
- Min/Max/Avg values
- Demand: peak, present, past, thermal and coincident
- TOU: 8 rates/day, 4 season
- TLC, LLC: per phase, delivered and received, transformer factors or % loss

MEASUREMENT LOGGING (optional)

- 8 groups x 50 channels
- Recording interval: 150/180 cycle to 120 minutes
- Max 203 days of storage of 400channels @ 10 minute recording intervals

REGISTERS

- 50 normal, 50 alternate, 50 test

LOAD PROFILE

- 16 channels storage
- 1-60 minute intervals
- Values stored in scalable counts or 32 bit engineering units
- Optional second independent 16ch LP Group
- Max one year storage of: 32channels @ 15 minute recording intervals

TIME SYNC

- Internal clock: 0.5 sec/day accuracy
- 50/60Hz line frequency
- External time sync options: IRIG-B, NTP, IEEE-1588, PPS

OPTIONAL I/O

Internal I/O

- Digital I/O: 8 channel selectable as input or output. Isolated power supply for digital inputs
- Analog output: 4 channel; 0-1 mA or 4-20 mA

External I/O

- Digital I/O: 6 channel selectable as input or output.
- Analog output: 4 channel; 0-1 mA or 4-20 mA
- RS-485 connection to meter (max 4000 feet)

Digital Input Rating

- Form A or KYZ
- Maximum voltage 40 VDC

Digital Output Rating

- Form A or KYZ
- Maximum open-circuit voltage: 200V DC or peak AC
- Maximum switching current: 50 mA

COMMUNICATIONS

8 Com. Ports Available

Port 1: Optical (standard)

- Type 2 – 19,200 baud

Ports 2: RS-232 Serial (optional)

- User configurable: 300 to 38,400 baud

Port 3 and 4: RS-232/485 Serial (optional)

- User selectable: RS-232/485
- User configurable: 300 to 38,400 baud

Port 5: Internal Analog Modem (optional)

- 56K baud
- With optional phone home on power fail
- With optional RS-485 communication repeater

Ports 6 and 7: Ethernet (optional)

- 100 BaseT, unshielded twisted pair
- DHCP or fixed IP address
- Up to 12 simultaneous connections
- WEB server, email notification

USB Port:

- Compatible w/USB flash drives
- Upload/download configuration
- Upgrade firmware
- Retrieve meter data

Communication Protocols

- Modbus RTU, Modbus TCP/IP (master and slave)
- DNP 3.0
- ANSI tables
- IEC 61850 (optional)
- JEM binary

METER DISPLAY

- 4.3" color graphic LCD
- Registers, phasor diagram, diagnostics
- User menu configuration

MECHANICAL

Case Styles

- Socket connected (S-base), small switchboard case, bottom connected (A-base), meter retrofits (JEM-2 and others)

Size and Weight

- S-base: 5.5 pounds/2.5kg
- A-base: 7.5 pounds/3.4kg
- Switchboard: 11.5 pounds/5.2kg

ENVIRONMENT

Operating Temperature

- -22° to 185°F (-30° to 85°C)

Storage Temperature

- -40° to 185°F (-40° to 85°C)

Humidity

- 5 to 95% relative humidity, non-condensing

ELECTRICAL STANDARDS

Fast Transient

- IEC 61000-4-4

Radiated/Conducted Emissions

- IEC 61000-4-3, IEC-61000 4-6

Surge Immunity

- IEC 61000-4-5

Electrostatic Discharge

- IEC 61000-4-2

Surge Withstand (SWC)

- IEEE Standard C37.90.1

AGENCY STANDARDS

- ANSI Standard C12.20-2010
- FCC Part 68, FCC Part 15
- IEC6100-4-30-15
- EN50160
- CAISO
- ERCOT

For Customer Support

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