



KW1850

18 Channel Power Meter, 0.5 Class Accuracy

The KW1850 Series meters combine high performance with ease of integration to provide an energy measurement and monitoring solution. The meter comes standard to be DIN rail mounted but is also available in a panel upgrade version that comes with NEMA 4X panel enclosure, pre-wired and labeled terminal blocks for voltage input, and industrial grade fuses (see ordering grid). The meter supports unidirectional monitoring up to 18 CT inputs or 6 three-phase circuits simultaneously for multi-point energy measurement. The compact design is suited for high density applications to be used in conjunction with commercial, industrial, and residential multi-tenant energy management systems. Key functions include multi-tariff time-of-use (TOU), billing mode feature, and power quality analysis- see table 1 for additional measurement functions and parameters. The meter has either 8MB (KW1850-P1-D-S) or 8GB (KW1850-P1-D-W) memory for

data logging, recording system events, and over/under limit alarming information that can be retrieved via a serial connection or remotely by Ethernet, depending on the model selected. The KW1850 Series incorporates Snap On CT technology which reduces polarity errors, installation time, and eliminate CT wiring configuration. For CT connection, the CTs are terminated and plugged directly into the meter using the provided connectors. The meter features a built-in LCD display and a five button keypad designed to simplify setup and provide local readings of all measurements of meter data. Many of the advanced meter functions are accessed via the Accuview Software which requires an RS-485 to USB converter for the KW1850-P1-D-S to connect to a PC or laptop, or the KW1850-P1-D-W which utilizes either Ethernet or Wi-Fi. The meter supports multiple user-selectable communication protocols, pulse output communication, 18 digital inputs, 6 digital outputs, and 2 alarm relays which allows seamless integration with data acquisition systems. The tamper-proof design is approved for revenue applications. The KW1850 Series is compatible with multiple Current Transformer input options, however, 333mV CT or Flexible Rogowski Coil CTs should not be intermixed within a specific meter.

Current Transformers are sold separately as shown on the Hinged, Split Core, Solid Core, or Rogowski Coils CT product data sheets.

Applications: Multi Point Sub-Metering Electrical Panel for Tenant Billing, Equipment Load Monitoring, Power Quality Monitoring, Data Centers, Industrial Applications, Predicted Maintenance, Renewable Energy, Overhead Cost Reduction, "NET ZERO", LEED, Green Buildings and Refrigeration

The KW1850 Power Meters are covered by ACI's Five (5) Year Limited Warranty. The warranty can be found in the front of ACI's Sensors & Transmitters catalog, as well as on ACI's web site, workaci.com.

PRODUCT SPECIFICATIONS

Service Type:	Single Phase, 3 Phase – Four Wire (WYE), Three Phase – Three Wire (Delta)
Power Supply¹:	100 - 415Vac, 50/60Hz, 100 - 300Vdc on terminals L and N
Power Consumption:	5W
Rated Voltage:	100-400VAC Line to Neutral (L-N) or 100-690VAC Line to Line (L-L) RMS for three phase or 100-400VAC RMS for single phase
Input Impedance:	2MΩ/Phase
PT Burden:	<0.2VA
Number of CT Inputs:	18
Acceptable CT Inputs:	333mV or Rogowski Coil (cannot mix CT's)
Accuracy:	ANSI C 12.20 class 0.5; IEC62053-22 Class 0.5s - See Table 2 for parameter accuracy, resolution, and range
AC Protection:	1A/250VAC External Fuse (not provided)
Measurement Type:	Real-time, True RMS measurement of instantaneous Voltage, Current, Power, Frequency, Harmonics, Phase Angle, Demand, Unbalance Factor, Running Time, and Power Factor
Line Frequency:	45/65Hz
Digital Inputs / Type:	18 Digital Inputs for Water and Gas Metering Pulse Counting / Dry Node
Input Current (MAX):	2mA
Input Voltage:	15-30VDC
Pulse Frequency (MAX):	100Hz, 50% Duty Cycle
SOE Resolution:	2ms
Auxiliary Power Output:	15VDC, 1W
Relay Output	
Load Voltage:	250VAC, 30VDC
Max Load Current:	3A (Resistant Load)
Isolation Voltage:	4000VAC (1 min)
Action Time (MAX):	10 milliseconds
Mechanical Life:	>5,000,000 cycles, typical
Conduction Impedance (MAX):	100mΩ
Measurement Data Parameters:	Energy, time of Use, Power Demand, Current Demand, Real Time Metering, Power Quality, Time, Alarming, Data Logging – See Table 1 complete list of Functions and Parameters
Multi-Tariff Time of Use (TOU):	4 tariffs (sharp, peak, normal, valley), 14 schedules, 14 segments, weekends and 10-year holiday settings





PRODUCT SPECIFICATIONS *(Continued)*

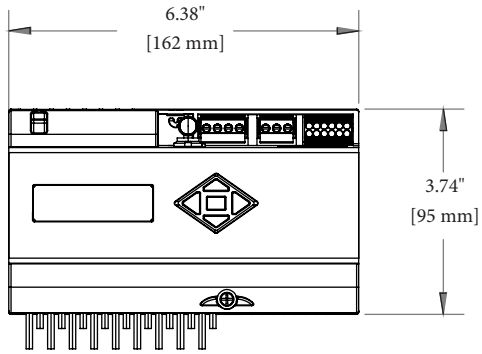
Over/Limit Alarms:	Ten limit alarms configured for peak demand, current, or power quality
Display:	LCD Graphic Display with Backlight High-resolution Display
Pulse Output:	Two-wire pulse train, Isolation Voltage 2500VAC, 0-30 VDC Load Voltage, 10mA Max Load Current, Pulse Width 20~100ms (80ms Default), Pulse Constant 1~60,000 (50000 Default) IMP/kWh
Hardware:	RS-485 Serial, Dual Ethernet (KW1850-P1-D-W Only), Wireless Network Card (KW1850-P1-D-W Only)
Memory Capacity:	8GB or 8MB (based on model selection) onboard memory for data-logging and historical trend analysis
Supported Protocols:	KW1850-P1-D-S: Modbus RTU and BACnet MS/TP via RS485 KW1850-P1-D-W: Modbus TCP, BACnet IP, SNMP, SNTp, WiFi, WPA, WPA2, HTTP/HTTPS, FTP, SMTP, NTP, SNMP MQTT, RSTP, IPV6
Maximum Distance:	1200 meters (3,937 Feet) with data range of 100K bits/second or less
Supported Modbus Baud Rates:	1200 to 115200 Baud Rate (19200 Modbus Default)
Data Bits / Parity / Stop Bit	8 / None (default), Even, Odd / 2, 1 (default)
Modbus Address Range:	1 to 247 (The default is 1)
Operating Temperature Range:	-13 to 158°F (-25 to 70°C)
Storage Temperature Range:	-40 to 185°F (-40 to 85°C)
Operating / Storage Humidity Range:	5 to 95%, non-condensing
Enclosure Material / Flammability Rating:	Polycarbonate / 94-V0
Wire Size:	16-22 AWG (1.5 to 0.6 mm ²)
Mounting:	IEC 35mm DIN Standard
Software:	Accuview Utility Software, Windows Based. USB-RS485 converter is required to connect to computer for KW1850-P1-D-S only.
Security:	Password Protected to access Settings. Sealed and Tamper Proof Cover.
Agency Approvals:	BTL Certified, CE, RoHS2, cULus Listed (File # E359521)
Product Dimensions (L x W x H):	6.38" (162 mm) x 3.74" (95 mm) x 2.64" (67 mm)
KW1850 Panel Upgrade (Optional):	
NEMA Rating:	NEMA 4X / IP66 Enclosure
Material:	Polycarbonate
Fuse:	600 VAC/2A
Wiring:	DIN rail mounted pre-labeled terminal blocks for voltage connection pre-installed
Flammability Rating:	UL 746C 5-inch flame test
Certifications:	UL 508A, EN62208
Dimensions (L x W x H):	11.81" (300 mm) x 11.81" (300 mm) x 7.01" (178 mm)
Enclosure Product Weight:	8 lbs. (3.63 kg)

Note 1: A fuse or small-sized circuit breaker is mandatory. A power supply can be an independent power supply and a fuse (typical 1A/250Vac) is suggested to be used when connecting the power supply to the meter. If a circuit breaker is utilized, it must be CE certified and comply with IEC 947 standard. An isolated transformer or EMC filter should be used in the auxiliary power supply loop if there is a power quality issue in the power supply.

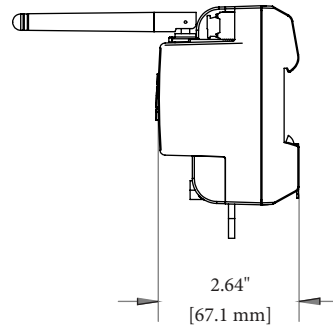




DIMENSIONAL DRAWING

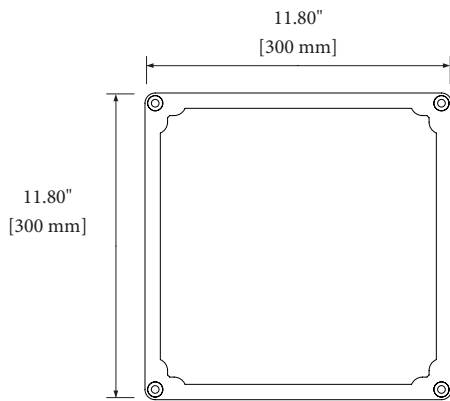


FRONT VIEW

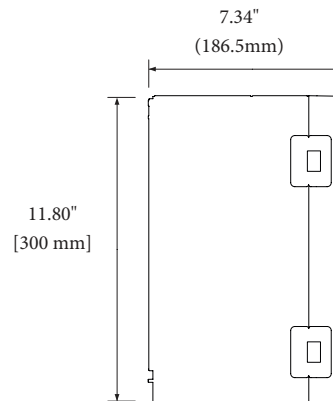


SIDE VIEW

DIMENSIONAL DRAWING POWER METER PANEL UPGRADE



FRONT VIEW



SIDE VIEW



TABLE # 1

Function		Parameters	KW1850-P1-D-S	KW1850-P1-D-W
Energy	Active Energy	Ep	•	•
	Reactive Energy	Eq	•	•
	Apparent Energy	Es	•	•
Time Of Use	4 Tariffs, 14 Schedules	TOU	•	•
Power Demand	Active Power Demand	Demand_P	•	•
	Reactive Power Demand	Demand_Q	•	•
	Apparent Power Demand	Demand_S	•	•
	Peak Power Demand	Demand_P_max	•	•
Current Demand	Current Demand	Total and each circuit	•	•
	Peak Current Demand	Total and each circuit	•	•
Real Time Metering	Phase Voltage	V1,V2,V3	•	•
	Line Voltage	V12,V23,V31	•	•
	Current	Total and each circuit	•	•
	Power	Total and each circuit	•	•
	Reactive Power	Total and each circuit	•	•
	Apparent Power	Total and each circuit	•	•
	Power Factor	Total and each circuit	•	•
	Frequency	F	•	•
Power Quality	Total Harmonic Distortion	THD*	•	•
	Individual Harmonics	2nd ~ 31st (Voltage and Current)*	•	•
	Current K Factor	KF	•	•
	Voltage Crest Factor	CF	•	•
	Voltage Unbalance	U_unbl	•	•
	Current Unbalance	I_unbl	•	•
Time	Real Time Clock (Year, Month, Date, Hour, Minute, Second)		•	•
Alarming	Over/Under Limit Alarming		•	•
Data Logging	8MB Memory		•	•
	8GB Memory			•
	RS485 Modbus®-RTU		•	•
	Ethernet Modbus®-TCP, HTTP, BACnet-IP, SMTP, SNMP, SNMP			•
	WiFi			•
I/O Option	18 Digital Inputs with 15Vdc power supply		•	•
	6 Digital Outputs, Second Pulse, Demand Cycle		•	•
	2 Relay Outputs		•	•
Display	LCD		•	•

**TABLE #2**

MEASURE			
Parameters	Accuracy	Resolution	Range
Active Energy	0.5s	0.1kWh	0~99999999.9kWh
Reactive Energy	1%	0.1kvarh	0~99999999.9kvarh
Apparent Energy	1%	0.1kVAh	0~99999999.9kVAh
Voltage	0.5%	0.1V	10~400V
Current	0.5%	0.001A	5mA~10,000A
Real Power	0.5%	0.1W	4000.0kW
Reactive Power	0.5%	0.1var	4000.0kvar
Apparent Power	0.5%	0.1VA	4000.0kVA
Power Factor	0.5%	0.001	-1.000~1.000
Frequency	0.2%	0.01Hz	45~65Hz
Real Power Demand	0.5%	0.1W	4000.0kW
Reactive Power Demand	0.5%	0.1var	4000.0kvar
Apparent Power Demand	0.5%	0.1VA	4000.0kVA
Current Demand	0.5%	0.001A	5mA~10,000A
Unbalance	2%	0.01%	0~300%
Harmonics	2%	0.01%	0~100%
Meter Running Time		0.01hour	0~999999.9h
Temperature Drift	less than 100ppm/°C(0-50°C)		

STANDARD ORDERING

Model #	Item #	Description
KW1850-P1-D-S	148259	18 Circuit, 0.5 Class Accuracy, Power Meter w/LCD, and serial RS-485 Modbus RTU and BACnet MS/TP Only
KW1850-P1-D-W	148258	18 Circuit, 0.5 Class Accuracy, Power Meter w/LCD, Serial and Ethernet Communication protocols, and Wi-Fi enabled
KW1850-P1-D-S-PC	151201	Panel Upgrade, same as KW1850-P1-D-S installed in NEMA 4X Enclosure w/ labeled and prewired supply voltage connections
KW1850-P1-D-W-PC	151202	Panel Upgrade, same as KW1850-P1-D-W installed in NEMA 4X Enclosure w/ labeled and prewired supply voltage connections

ACCESSORIES ORDERING

Model #	Item #	Description
KW1850-ENC	148260	NEMA 4X/IP66 Wall Mount Enclosure with Steel Mounting Plate - DIN Rail not Provided
SO-SP1	148261	Snap On CT Replacement Connector Kit (Package of 20)
USB-RS485	148243	RS485 to USB Converter to connect KW1850-P1-D-S to PC
AK-03	150827	Three Fuse Pack; Inline Fuse Kit; 600V, 2A; Slow Blow

