



# KW350

## 3 Channel Power Meter, 0.5 Class Accuracy, Serial Communication Protocols



The KW350 DIN rail mounted meter combines high performance with ease of integration to provide a cost-effective power and energy monitoring solution. The meter can monitor both uni-directional and bi-directional current and features a built-in LCD display designed to simplify setup and local reading of all measurements of meter data. The user interface enables access to configure the meter set-up options. Many of the advanced meter functions connect with the Utility Software which requires an RS-485 to USB converter to connect to a PC or laptop - See Accessory Ordering Grid. The meter supports user selectable Modbus-RTU and BACnet MS/TP communication protocols, and pulse output communication which allows seamless integration with data acquisition systems. Meters also feature a built-in relay that can be used to trigger an alarm. The KW350 provides demand measurement of Current, Active Power, Reactive Power and

Apparent Power. It also provides demand forecasting as well as the peak demand. Meters can record the time and event regarding important parameter events such as the run time of the meter and alarm functions. The Auto Phase-check function automatically checks for common wiring mistakes, such as current transformer direction, voltage, and current phase alignment. The tamper-proof design is approved for revenue applications. Model selection is determined by which style of current transformer is required- 333mV or Rogowski coil (see ordering grid). Current Transformers are sold separately as shown on the Hinged, Split Core, Solid Core, or Rogowski Coils CT product data sheets.

**Applications:** Sub-Metering Electrical Panel, Equipment Load Monitoring, Industrial Applications, Predicted Maintenance, Renewable Energy, Overhead Cost Reduction, "NET ZERO" Buildings, LEED Buildings, Green Buildings, and Refrigeration

### PRODUCT SPECIFICATIONS

<b>Service Type:</b>	Single Phase, 3 Phase – Four Wire (WYE), Three Phase – Three Wire (Delta)
<b>Power:</b>	100 - 415Vac, 50/60Hz, 100 - 300Vdc on terminals L and N.
<b>AC Fuse Protection:</b>	External 1A/600VAC Fuse
<b>Rated Voltage:</b>	100-400VAC Line to Neutral (L-N) or 100-690VAC Line to Line (L-L)
<b>Number of CT Inputs:</b>	3
<b>Revenue Grade Accuracy:</b>	IEC 62053-22 0.5s Class / ANSI C12.20 0.5 Class
<b>Voltage Channels:</b>	400 Volts AC (L-N), 690 VAC (L-L), 50/60 Hz
<b>Current Channels:</b>	3 Channels, 0.4 VAC max, 333 mV CT's or 0 to 6000 Amps with Rogowski Coils
<b>Maximum Current Input:</b>	150% of current sensor rating (mV CT's) to maintain accuracy. Up to 6000 Amps w/ Rogowski Coils
<b>Measurement Type:</b>	Real-time, True RMS measurement of instantaneous Voltage, Current, Power, Frequency and Power Factor
<b>Line Frequency:</b>	50/60 Hz
<b>Measurement Data Parameters:</b>	See Table 1
<b>Meter Sampling Rate:</b>	3.84kHz @ 60 Hz; 3.2kHz @ 50 Hz
<b>Real Time Parameter Update Rate:</b>	200 mS
<b>Accumulated Parameter Update Rate:</b>	1 Sec
<b>LCD Display:</b>	3 Display Modes (Important Parameter's, All Parameter's, Settings Display Modes)
<b>Energy Pulse Output:</b>	Two-wire pulse train, Isolation Voltage 2500 VAC, 5~60 VDC Load Voltage, 10 mA Max Load Current, Pulse Width 20~100ms, Pulse Constant 1~60,000
<b>Energy Pulse Power Supply:</b>	External 24 VDC Power Supply (Required) Note: 1K Ohm External Current Limiting Resistor (Recommended)
<b>Communication Protocols:</b>	Serial RS-485 Modbus RTU (SunSpec IEEE-754 Single Precision Floating Point Format) or BACnet MS/TP
<b>Maximum Distance:</b>	1200 meters (3,937 Feet) with data range of 100K bits/second or less
<b>Termination Resistor:</b>	120 Ohm to 300 Ohm 1/4W Resistor (Not Included); (Installed at end of RS-485 Comm Bus)
<b>Supported Baud Rates:</b>	BACnet MS/TP Protocol: 9600, 19200, 38400, 76800, 115200 Baud Rate (38400 BACnet Default) Modbus RTU Protocol: 1200, 2400, 4800, 9600, 19200, 38400, 115200 Baud Rate (19200 Modbus Default)
<b>Max Station:</b>	127 MS/TP Masters (MAC Addresses is 0 to 127)
<b>BACnet Device Instance Number:</b>	1 (Default); Field adjustable from 1 to 4194303
<b>Modbus Data Bits / Parity / Stop Bit</b>	8   None, Even, Odd   2, 1
<b>Enclosure Material / Flammability Rating:</b>	Polycarbonate   UL 94V-0
<b>Operating Temperature Range:</b>	-13 to 158°F (-25 to 70°C)
<b>Storage Temperature Range:</b>	-40 to 185°F (-40 to 85°C)
<b>Operating / Storage Humidity Range:</b>	5 to 95%, non-condensing
<b>Wiring Connections:</b>	Screw Connections
<b>Wire Size:</b>	14-22 AWG (2.5 to 0.34 mm <sup>2</sup> )





**PRODUCT SPECIFICATIONS** *(Continued)*

<b>Relay Output</b>	
<b>Load Voltage:</b>	250VAC, 30VDC
<b>Max Load Current:</b>	5A (Resistant Load)
<b>Isolation Voltage:</b>	2000VAC (1 min)
<b>Action Time (MAX):</b>	10 milliseconds
<b>Mechanical Life:</b>	20,000,000 cycles
<b>Electrical Life:</b>	Above 50,000 cycles (5A, 250VAC Resistant Load)
<b>Mounting:</b>	IEC 35mm DIN Rail (Standard)
<b>Utility Software:</b>	AcuRev 1310 Utility Software, Windows Based; (USB-RS485 converter is required to connect to computer)
<b>Security:</b>	Password Protected to access Settings. Sealed and Tamper Proof Cover.
<b>Agency Approvals:</b>	BTL Certified, CE, RoHS2, cULus Listed (File # E359521)
<b>Product Dimensions (L x W x H):</b>	4.25" (108 mm) x 3.54" (90 mm) x 2.46" (62.5 mm)
<b>Power Meter Weight:</b>	0.82 lbs. (0.372 kg)
<b>KW350-ENC Specifications (Optional):</b>	IP66
<b>Ingress Protection (EN 60529):</b>	IP67
<b>Electrical Insulation:</b>	Totally Insulated
<b>Halogen free (DIN/VDE 0472, Part 815):</b>	0
<b>UV Resistance and Flammability Rating:</b>	UL 508
<b>Glow Wire Test (IEC 695-2-1) °C:</b>	960
<b>NEMA Rating:</b>	UL Type 4, 4X, 6, 6P, 12 and 13
<b>Enclosure Dimensions (L x W x H):</b>	8.24" (209.3 mm) x 8.24" (209.3 mm) x 4.96" (126 mm)
<b>Enclosure Product Weight:</b>	3.8 lbs. (1.724 kg)

**Note 1:** A power supply can be an independent power supply and a fuse (typical 1A/600 Vac) is suggested to be used when connecting the power supply to the meter

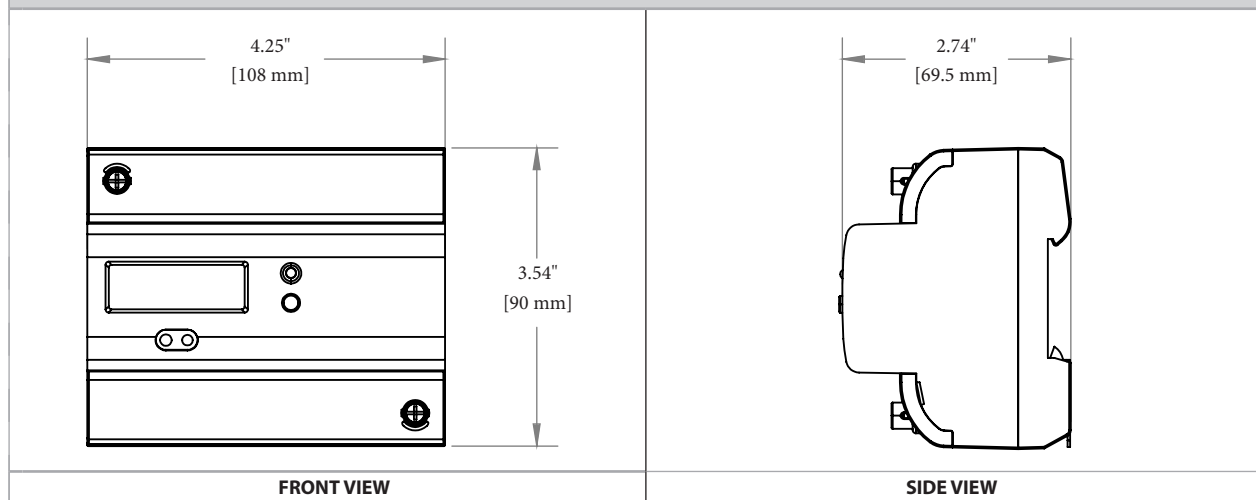
**TABLE 1**

Parameter	Accuracy	Resolution	Range
Active Energy	0.5%	1Wh	0-999999999
Reactive Energy	0.5%	1varh	0-999999999
Apparent Energy	0.5%	1VAh	0-999999999
Voltage	0.5%	0.1V	10V-1000KV
Current	0.5%	0.001A	5mA-50000A
Active Power	0.5%	1W	-99-99MW
Reactive Power	0.5%	1var	-99-99Mvar
Apparent Power	0.5%	1VA	-99-99MVA
Power Factor	0.5%	0.001	-1.00-1.000
Frequency	0.2%	0.01Hz	50/60
Power Demand	0.5%	1W/var/VA	99MW/Mvar/MVA
Current Demand	0.5%	0.001A	5mA-50000A





## DIMENSIONAL DRAWING



## STANDARD ORDERING

Model #	Item #	Description
KW350-P1-D-S-RC	148238	3 Circuit, 0.5 Class Accuracy, Power Meter Rogowski Coil Input w/LCD
KW350-P1-D-S-SC	148233	3 Circuit, 0.5 Class Accuracy, Power Meter 333mV CT Input w/LCD

## ACCESSORIES ORDERING

Model #	Item #	Description
KW350-ENC	148240	NEMA 4X/IP66 Wall Mount Enclosure, includes: Din Rail Mounting Hardware, Swing Panel Kit, Tamper Proof Locking Options
AXM-DIN	148248	KW320 DIN Rail Adapter