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Inline Power Meter AC Manual

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What is the Inline Power Meter - AC Version

The ILPM is an "in-line" AC power meter that is connected between the electrical source and a power strip, or AC voltage equipment, monitoring the voltage (V), current (A) and Kilowatt Hours (kWh) being consumed with billable grade accuracy. Remotely switch devices with an optional relay. The relay is a Bi-Stable Latched relay, which retains its state regardless of whether it is receiving power or not.

Essential Benefits
Check how close you are to tripping your circuit breaker
Ensure sufficient power overhead before adding new equipment to a circuit
Bill individual clients in co-located services
Monitor up to 16 Inline Power Meters from a single sensorProbe+ or SEC+

The AC ILPM comes in either a 16A or 32Amp version. AC Voltage rating = 110AC to 220VAC. Please refer to the product datasheet for specific part numbers and connector types.

Very Important note: The ILPM is <u>ONLY</u> compatible with the SP+ (SP2+, SPX+ & SEC+) base units and will not work on the securityProbe or sensorProbe family of base units. They also are not compatible with any version of the AKCP Pro Server prior to v13.0.

 Rules for Safe Operation

To avoid possible electric shock or personal injury, and to avoid possible damage to the ILPM sensor, or to the equipment being connected, please adhere to the following rules:-

- Before using the ILPM, inspect the housing. Do not use the ILPM if the housing or any portions of the power input and output connectors are damaged.
- DO NOT connect the ILPM, or the power plugs to the AC power input source without first cutting or disengaging the AC power that will connect to the ILPM power input connection.
- When connecting the AC power plugs, or direct AC lines/cables to the ILPM's make sure you are connecting the positive (Line or Hot Phase), negative (Neutral or Return Phase) and ground (Protective Earth Ground) correctly.
- Ensure that the sensorProbe+ or base units, and the equipment being connected to are properly grounded.

- Do not apply more than the rated AC voltage and AC current as specified for the ILPM.
- Do not install the ILPM in an environment where there is very high humidity, flammables or anywhere near or in contact with strong magnetic fields.
- Do not install or use the ILPM if the meter is wet or if the user's hands are wet.
- When servicing or replacing the ILPM, use only the same model number with identical electrical specifications.
- The internal circuits and components of the ILPM must not be tampered with. Tampering with the internal circuitry can cause damage to the ILPM and personal injury.
- Always use common sense when working with the AC voltages and current to ensure your safety and if you are not sure please consult with a qualified electrician.
- AKCP is not liable for any type of damage or injury resulting from a lack of knowledge or incorrectly installed equipment.

## Connecting the Inline Power Meter

Noted in the image below, you need to connect the RJ-45 extension cable from the RJ-45 port on the unit to the RJ-45 sensor port on the sensorProbe+ base unit.

Connect the AC power plug of the "Power In" to the AC power source, and the AC power plug of the "Power Out" to the AC appliance or the power strip.

The following image shows an example how the ILPM has been installed in a 19" server cabinet to monitor the other equipment that has been installed in the cabinet.

## Inline Power Meter Installation Example
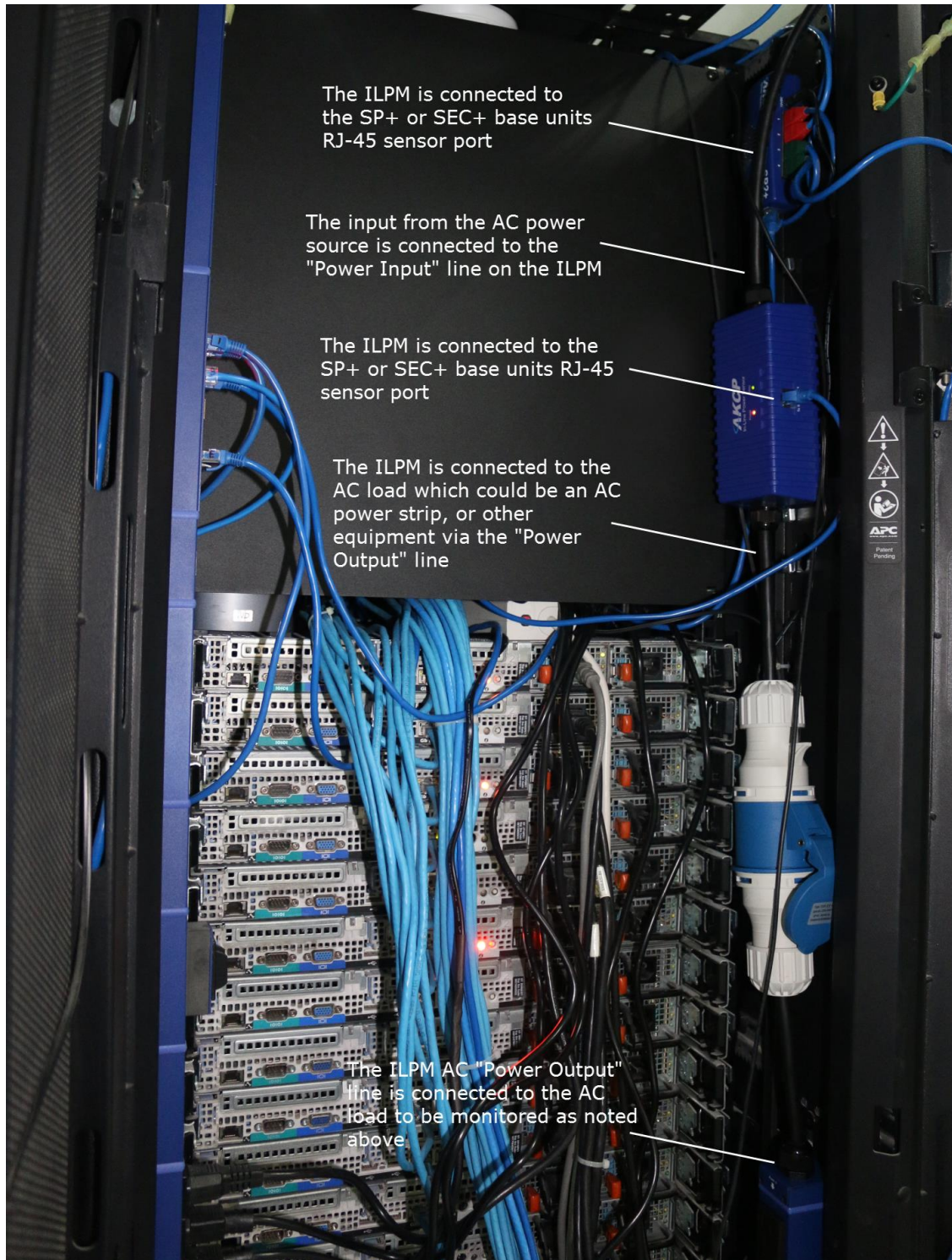
The above installation example shows how the ILPM is connected to the SP2+ unit and the AC equipment installed in this server cabinet.

Connecting to existing power strips

With the AC power disconnected, first connect the "Power In" connector to the power wires on ILPM power in port, then connect the "Power Out" connector first to the ILPM then the other end connector to the power strip as shown in the image below.

Then connect the RJ-45 extension cable from the ILPM to the RJ-45 sensor port on the sensorProbe+.
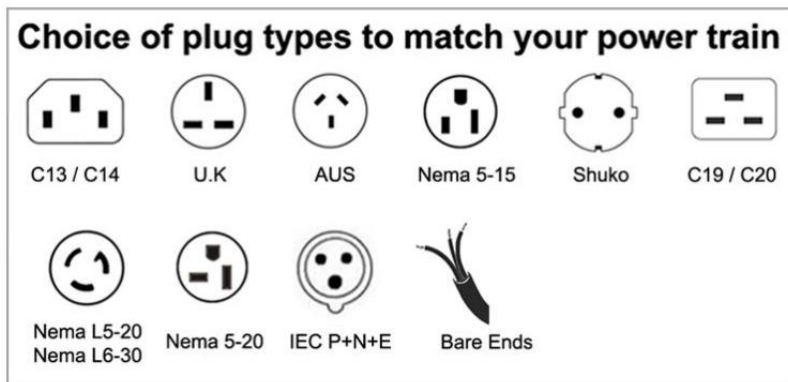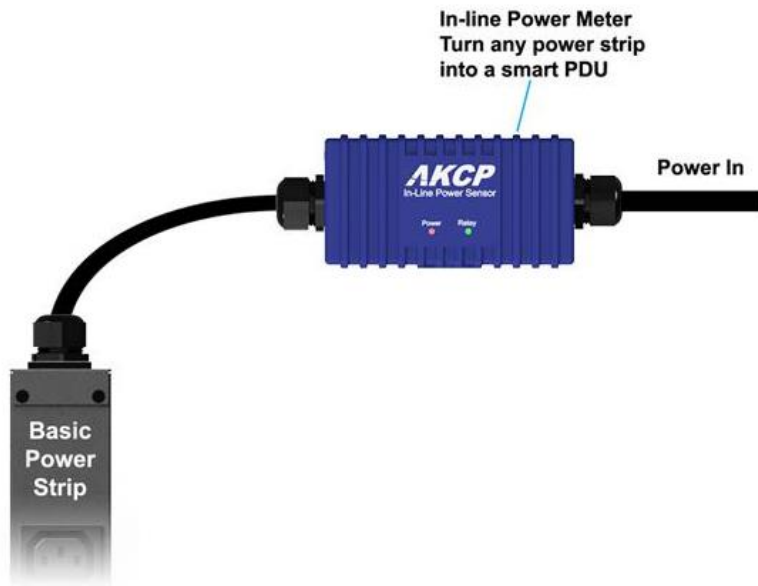
A variety of AC power plug types can be ordered for each specific requirement as shown above. Please refer again to the ILPM sensor datasheet for the part numbers and ordering information.

What can the Inline Power Meter monitor?

The Inline Power Meter can monitor and record the following from the sensorProbe+ base units.

Current = AC RMS Current to the load.

Voltage = AC RMS Voltage of the load.

Active Power = Power in kW (kilowatt), is the real power transmitted to loads such as motors, lamps, heaters, and computers.

Power Factor = In AC circuits, the power factor is the ratio of the active power consumed by a component or circuit to the apparent power. It is an indicator of the quality of design and management of an electrical installation.

Total Active Energy = The total power in kWh (kilowatt hours) consumed by the load in the AC circuit.

Leakage Current = Leakage current is the current that flows from the AC circuit in the equipment to the chassis, or to the ground and can be either from the input or the output. Most power supplies in equipment have a small amount of leakage current.

(Optional) Relay = Allows the ability to shut off or turn on the power to the load.

Maximum Current & Power

Below shows the maximum current & power (temporary overload condition) for each model.

1a) maximum measurement range of current for 16A model = 16A, current reading value will saturate at 16A, device is rated for 20A max (derated 16A for UL),

1b) maximum measurement range of power for 16A model = 3.84 kW (16A x 240V, with PF=1)

2a) maximum measurement range of current for 32A model = 32A, current reading value will saturate at 32A, device is rated for 32A max (derated 24A for UL)

2b) maximum measurement range of power for 32A model = 7.68 kW (32A x 240V, with PF=1)

ILPM Sensor Web UI Setup
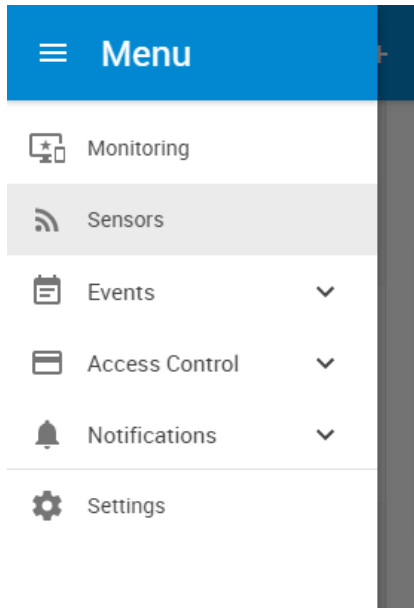
After connecting the ILPM to the base unit and connecting the power, log into the SP+ or SEC+ base unit as administrator and navigate to the sensors page as shown above.

As shown in the screen shot below, then you would click on the sensor port that the ILPM is connected to and choose which sensor to setup.
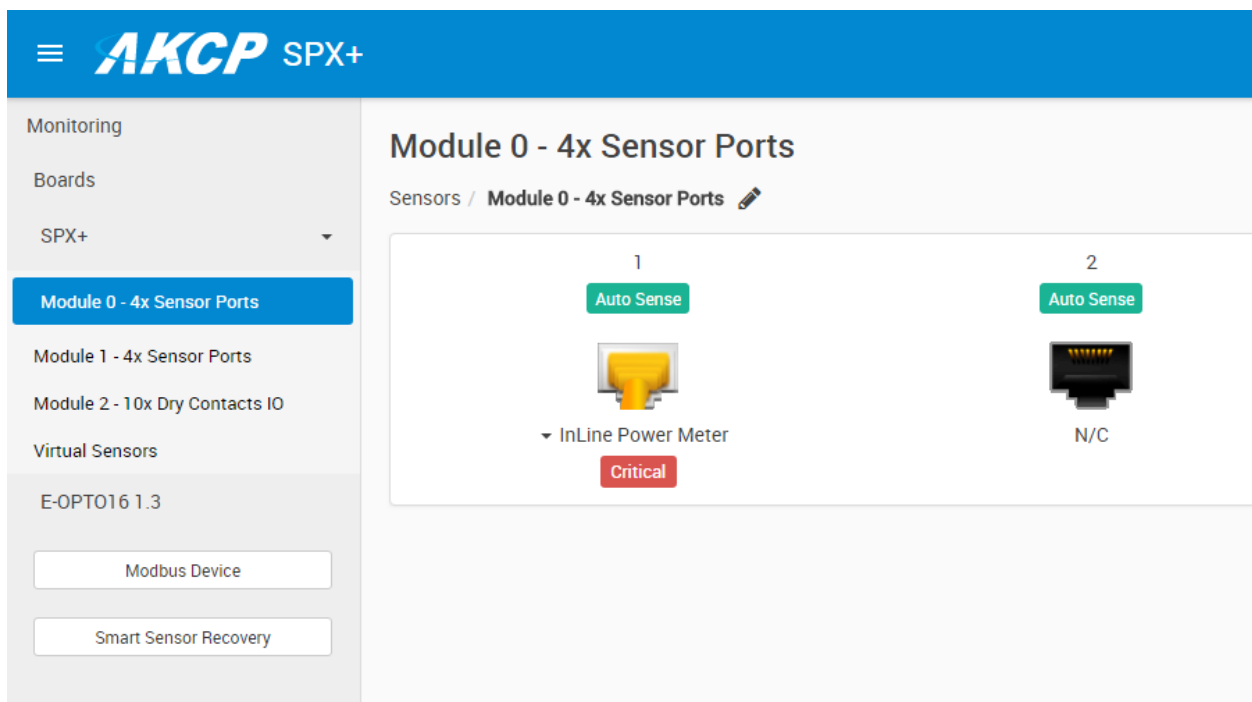
Inline Current

Now you can set your current thresholds as shown in the screen shot below.

Inline Current Advanced Settings

By clicking on the Advanced tab you can then setup the Rearm, Data Collection type. Enable the Calendar, Graph or Filter Status.

Current	Advanced	Continuous Time		
		Rearm	0.5	
		Data Collection Type	Instantaneous ▼	
		Enable Calendar	○ On ● Off	
		Graph Enable	○ Enable ● Disable	
		Filter Status	○ Enable ● Disable	
			Save Cancel	

Note: Advanced Settings are exactly the same for each InlinePower Meter reading sensor.

Inline Current Continuous Time

You can also set the Continuous Time as shown in the screen shot below.

Current	Advanced	Continuous Time

Continuous Time for a Sensor Status to be active before accepting as a new status ❓

High Critical	0
High Warning	0
Normal	0
Low Warning	0
Low Critical	0
Sensor Error	0
	Save Cancel

Note: Continuous Time Settings are exactly the same for each InlinePower Meter reading sensor.

Inline Voltage

Now you can set your Voltage thresholds as shown in the screen shot below.

Inline Active Power

Now you can set your Active Power thresholds as shown in the screen shot below.

Inline Power Factor

Now you can see the Power Factor as shown in the screen shot below.

Power Factor	Advanced

Sensor Name | Power Factor Port 1

Sensor Status | Normal

Sensor Reading | 1

Sensor Currently | Online

Offline All Sensors In Error On This Port

Save   Cancel

Inline Total Active Energy

Now you can see the Active Energy as shown in the screen shot below.

Total Active Energy	Advanced

Sensor Name | Total Active Energy Port 1

Sensor Status | Normal

Sensor Reading | 0 kWh

Last Reset | N/A   Reset

Sensor Currently | Online

Offline All Sensors In Error On This Port

Save   Cancel

Inline Leakage Current

Now you can set your Current Leakage thresholds as shown in the screen shot below.

Optional Bi-Stable Latched Relay

A latched relay is basically a relay that will maintain its position after the power is removed. The relay LED is located on the right of the power LED and shows the status of the relay.

Relay Advanced Settings

This concludes the InlinePower Sensor AC Manual.

Please contact support@akcp.com if you have any further technical questions or problems setting up your modem or your alerts.

Thanks for Choosing AKCP!