

Charging Cabinet Smart PDU Function Description

Models 181105, 181112, 181129, 181174, 181181,
181198



Barcode	Short Name	Smart PDU Parameter	
		Input / Output	Max Power
181105	20 Outlet AC UK	AC220/240V 50/60HZ 10A	2300W
181112	20 Outlet AC US	AC100/120V 50/60HZ 12A	2300W
181181	20 Outlet AC Thai	AC220V 50HZ 15A	3080W
181129	20 Outlet AC EU	AC220/240V 50/60HZ 10A	2300W
181174	30 Outlet AC UK	AC220/240V 50/60HZ 10A	2300W
181198	30 Outlet AC EU	AC220/240V 50/60HZ 10A	2300W

Mechanism

The Smart PDU divides the entire operating circuit into three zones (Zone A, Zone B, and Zone C) during operation. Based on the preset current safety threshold (14A), it determines the actual operating status of the circuits to maximize the product's charging efficiency.

Power-On Startup Sequence

- Zone A is powered on.** The Zone A indicator light turns on. The zone operates for 30 seconds while its current is measured. After 30 seconds, Zone A is powered off (indicator light turns off), and the measured operating current value for Zone A is recorded.
- Zone B is powered on.** The Zone B indicator light turns on. The zone operates for 30 seconds while its current is measured. After 30 seconds, Zone B is powered off (indicator light turns off), and the measured operating current value for Zone B is recorded.
- Zone C is powered on.** The Zone C indicator light turns on. The zone operates for 30 seconds while its current is measured. After 30 seconds, Zone C is powered off (indicator light turns off), and the currents of Zones A, B, and C are summed.

Additional Notes

- During the Zone A, B, C detection phase, a 5-second delay is added when powering on each zone (20240315).
- When all three zones operate together, a 5-second delay is also added for each zone's power-on (20240315). The corresponding indicator light turns on synchronously when each zone is activated.

Operating Logic

- If $A + B + C < \text{Safety Threshold}$**

All three zones operate simultaneously. The indicator lights for all active zones remain on.

- If $A + B + C > \text{Safety Threshold}$**

The product switches to zoned operation. The zoning strategy is designed to achieve the highest efficiency without exceeding the safety threshold (14A). Typical zoning combinations include A+B, A+C, or B+C.

- If the sum of any two zones exceeds 14A**, the system enters cyclic single-zone operation (A/B/C).
- During zoned operation, the indicator lights for active zones turn on, while those for inactive zones turn off.
Note: A single zoning cycle lasts approximately 10 minutes and 30 seconds. After each cycle, the system re-measures the currents of all three zones and reallocates them. The allocation principle ensures that each zone receives approximately equal operating time (e.g., $AB \rightarrow AC \rightarrow BC$, so each zone is activated twice per full rotation, rather than repeating patterns such as $AB \rightarrow AC \rightarrow AB \rightarrow AC$).
- After operating in zoned mode for a period, if the total load current of the three zones decreases and $A + B + C$ falls below the safety threshold, all three zones will resume simultaneous operation.
- If new loads are subsequently added and the total current rises again, the system will automatically recalculate the currents of the three zones and reallocate them accordingly.

Overcurrent Protection

If the current of any single zone exceeds 15A, that zone will be immediately shut down and excluded from the current cycle. The load on that zone must be manually adjusted to reduce the operating current. The zone will remain offline until the next cycle, at which point it will be re-evaluated.

Indicator Lights (for models equipped with indicators)

The three indicator lights correspond to the three circuits.

- Blue light ON: The zone is powered on.
- Blue light OFF: The zone is powered off.