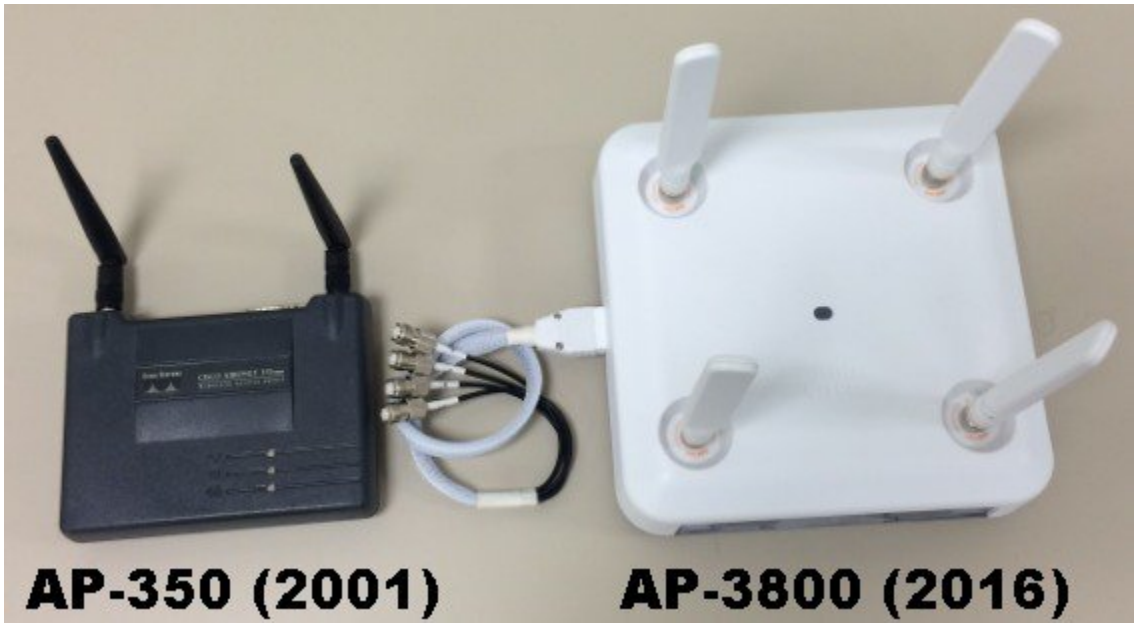
AP 2800 and AP 3800 Powering Options

With each advance in wireless technology, access points are increasing in the number of radios, processing power and memory. In 2001 the AP-350 Access Point had one 2.4 GHz radio and processor requiring only 6 Watts of power. These early PoE access points would fully function using the earlier 802.3af (15.4W) powering systems developed in 2000-2003.

Figure 1: Early AP-350 used 6 Watts-Newer AP 3800 requires 802.3at or PoE+



Later PoE standards have since emerged with 802.3at providing up to 30 Watts at the Power Sourcing Equipment (PSE). Many of Cisco's previous access points such as the AP-1850 and AP-3700 worked best with the higher power sources 802.3at and PoE+ but would function with "reduced functionality" if powered by the older 802.3af 15.4W powering systems.

With the introduction of the XOR radio along with more advanced features, it simply is not feasible to run these higher performance access points on the older legacy 802.3af (15.4W) powering systems. Customers who have such older systems should upgrade to 802.3at (30W) PoE equipment or systems that support uPoE for best performance or use a different power source such as a mid-span injector or local power supply. Note:

If the AP2800 and AP 3800 are powered from an 802.3af power source the LED will cycle though the colors and the radios will be disabled.

Performance requires power as the AP 2800 and AP 3800 have much more advanced features such as:

1. Dedicated microprocessor and memory for each radio band
2. Dual core processor to manage access point and Ethernet functionality
3. Additional XOR radio and antenna switching circuitry, pushing transceiver count to 12 radios
4. Cisco CleanAir silicon for complete spectrum analysis and interference detection
5. Cisco ClientLink powerful (legacy .11a/g/n and .11ac Wave 1 beamforming)–improving older client connectivity and performance; IEEE specification is limited to only TxBF on 802.11ac Wave-2 clients
6. Additional (auxiliary) Ethernet port, USB and advanced radio functions such as 160 MHz / Dual XOR
7. Support for smart antenna functionality (WSM monitor mode and enhanced location)
8. 802.3bz (NBASE-T) mGig Ethernet support (AP 3800)
9. Future hardware expandability using modular technology (AP 3800)

Understanding different types of PoE powering standards:

- Cisco Pre-standard PoE - Original implementation 6-7 Watts (2000-2001)*
- Cisco Pre-standard PoE - upgraded to negotiate up to 10-15 Watts via CDP (2001-2003)
- IEEE 802.3af PoE mechanism that supplies power up to 15.4W (July 2003)*
- IEEE 802.3at PoE mechanism that supplies up to 30W (2009)*
- UPoE Cisco method of Universal Power over Ethernet that supplies power up to 60W (2014)*

Note The * indicates these are approximate dates and PoE is defined as the maximum power required at the source.

Cisco AP 2800 and AP 3800 easily function with 802.3at powering systems and for advanced features like module support (AP 3800) Cisco UPoE can be used.

Figure 2: AP 2800 and AP 3800 requires an 802.3at or better PoE source

AP 2800 & AP 3800 - Power Requirements

		Description	AP Functionality	PoE Budget @ PSE (Watts)	802.3af Or PWRINJ5	802.3at PoE+ PWRINJ6	802.3bt uPoE
2800	PoE 802.3at	2800 – Out of the Box (8.2.x.x)	All Features Enabled*	26W	X	✔	✔
		Description	AP Functionality	PoE Budget @ PSE (Watts)	802.3af Or PWRINJ5	802.3at PoE+ PWRINJ6	802.3bt uPoE AIR-PWR50
3800	PoE 802.3at	3800 – Out of the Box (8.2.x.x)	All Features Enabled* Except Module support	30W	X	✔	✔
	PoE 802.3bt (uPoE)	3800 – Out of the Box (8.2.x.x)	All Features Enabled* Including Module support	52W	X	X	✔

* USB support not available at FCS may increase power up to 3W

If an 802.3at or better power source is not available, the following Cisco mid-span injectors may be used.

Figure 3: Low cost 802.3at GbE injector for AP 2800 and AP 3800 (if mGig is not required)

An additional mid-span injector capable of 802.3bz (known as mGig / N-BASE-T).

Figure 4: Planned Mid-Span Injector

Note The Cisco AP 2800 does not support a local power supply; however the AP 3800 does have a new high wattage supply that can be used in applications where a PoE source is unavailable.

Figure 5: White power supply and cord

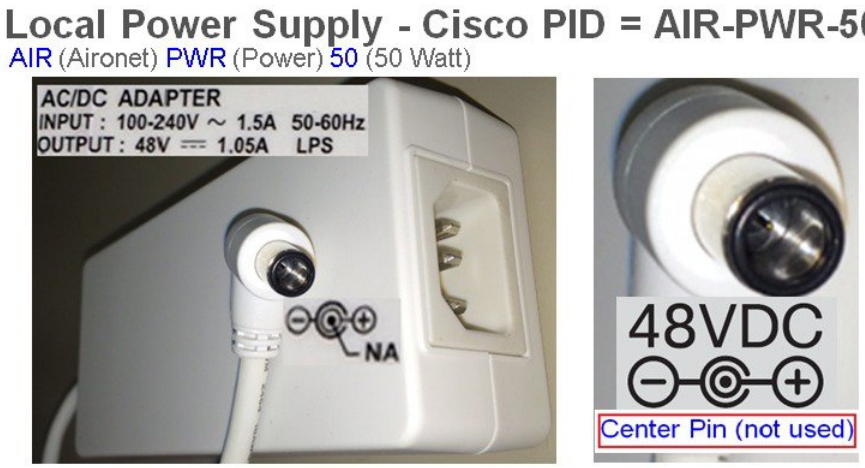
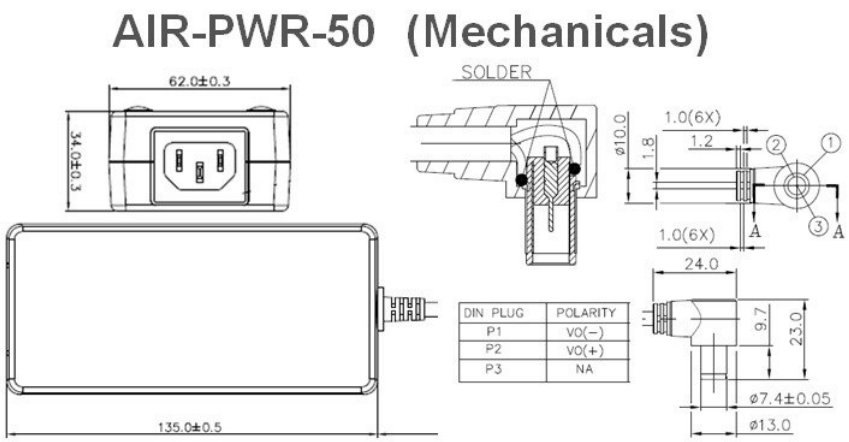


Figure 6: AIR-PWR-50 mechanicals - Spare part # AIR-PWR-50=



Note The following Mid-Span devices are not compatible with the AP 2800 AP 3800:

- Mid-Span Injectors–AIR-PWRINJ, AIR-PWRINJ2, AIR-PWRINJ3, AIR-PWRINJ4 and AIR-PWRINJ5
- Local power supplies–AIR-PWR-A, AIR-PWR-B and AIR-PWR-C