

USB Power delivery Application guide



Intelligent power on demand

What is USB power delivery?

The USB Power Delivery (USB PD) is a fast-charging technology based on the USB-C standard. It utilizes its high power output and an adjustable voltage supply to optimize charging based on your device's consumption needs. Whether you are charging your headphones or a laptop, the USB PD, can safely and quickly recharge your device's battery.



TRUSBPDAC



TRUSBPDC

Why is the USB power delivery receptacle rated in watts? Why not amps?

Standard USB devices (non-power delivery) use constant voltage (5V) to charge your device. Current is the only variable in this situation (1-5 Amps typically) so it makes sense to rate these devices in Amps.

A USB PD enabled device however, can provide different voltages (5V-20V) based on the capacity and charging profile of your device. It can also vary its current similar to a standard USB device. As a result, it makes more sense to measure the charging capability of a USB PD device in Watts vs. Amps.

Rating the device in Watts also helps better correlate with power supplies of larger devices such as laptops.

Is USB power delivery technology safe?

A USB PD enabled device uses a "handshaking" approach to communicate with your device to supply the correct voltage and current.

USB PD enabled devices are also backwards compatible. This means that if a non-power delivery device is connected, a USB PD outlet will charge it based on the standard USB-C protocol.

As a failsafe, there is built-in overcurrent protection (4A) as well.

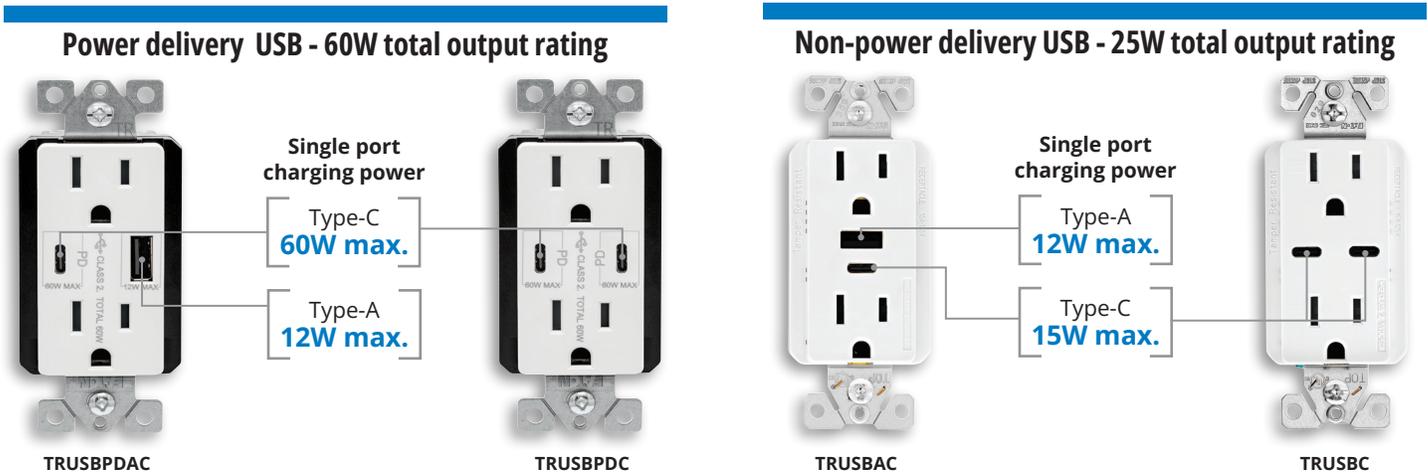
Does Eaton's USB power delivery receptacle allow data transfer?

Just like our other USB receptacles, our USB PD receptacle also do not allow data transfer and are solely used for charging purposes.



Powering Business Worldwide

How does Eaton's Power Delivery USB receptacle stack up against a standard USB receptacle (non-power delivery)?



Here is a comparison of Eaton's 60W Power Delivery USB receptacle versus our best non-power delivery USB receptacle.

USB Model	60 Watt PD USB	5A USB
USB Type	Type-A/C, Dual Type C	Type-A/C, Dual Type-C
Eaton Catalog number(s)	TRUSBPDC15/20 TRUSBPDC15/20	TRUSBAC15/20 TRUSBC15/20
Total Output Power Rating	60W	25W
Single Port Charging Power	60W (C), 12W (A)	15W (C), 12W (A)
Termination	Screw	Screw
Load Testing, Time to Charge*	Time to Charge 0-50% (USB C Port)	Time to Charge 0-50% (USB C Port)
iPhone 15 Pro Max	25 minutes	56 minutes
iPad 10	32 minutes	85 minutes
Samsung Galaxy S23 Ultra	27 minutes	70 minutes
MacBook Pro M2	31 minutes	Not compatible
MacBook Air M2	31 minutes	Not compatible
HP EliteBook 450 G10	33 minutes	Not compatible

* Load testing done in engineering lab in 2023, only for models of electronic devices listed, with only one device plugged in to charge at a time unless otherwise noted. Charging times may vary based on number of devices charging, state of devices, quality of charging cords, and the age/condition of the battery.



Never miss a moment with Eaton's line of Power Delivery USB receptacles.



Scan the QR code for more information on Eaton's USB charging solutions

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