User Manual
SKU: TPX00242

Description

The Arduino® USB-C Power Supply (45W) (TPX00242) is a compact, interchangeable plug adapter designed for use with USB-C devices supporting USB Power Delivery (PD). The 45 W multi-voltage power adapter provides intelligent power delivery across five voltage profiles (5 V, 9 V, 12 V, 15 V, 20 V), negotiating the optimal charging parameters for connected devices. With interchangeable regional plugs (EU, UK, US, AU) and broad safety certifications, it provides a universal power solution for development, prototyping, and deployment scenarios worldwide.

CONTENTS

1 Features

1.1 General Specifications

Arduino USB-C Power Supply

Feature	Specification
Model Number	TPX00242
Adapter Type	Interchangeable plug-in adapter
Output Connector	USB-C (USB Type-C)
Dimensions (Body)	64 × 64 × 30 mm (folded plug) / 64 × 80.06 × 30 mm (unfolded plug)
Material	PC (Polycarbonate) housing

1.2 Input Specifications

Parameter	Specification
Rated Input Voltage	100 - 240 V AC
Input Voltage Range	90 - 264 V AC
Input Frequency	47 - 63 Hz (50/60 Hz)
Maximum Input Current	1.5 A

1.3 Output Specifications

Arduino USB-C Power Supply Output

Output Voltage	Maximum Current	Maximum Power
5.0 V DC	3.0 A	15 W

Output Voltage	Maximum Current	Maximum Power
9.0 V DC	3.0 A	27 W
12.0 V DC	3.0 A	36 W
15.0 V DC	3.0 A	45 W
20.0 V DC	2.25 A	45 W

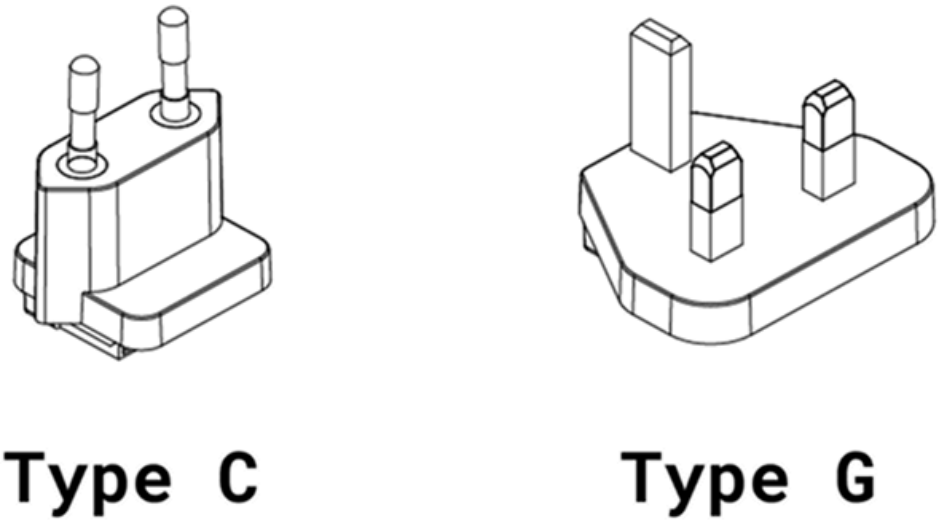
Combined Maximum Output Power: 45 W

> **Note:** The power supply negotiates the appropriate voltage and current with the connected device using USB Power Delivery (PD) protocol. The device will select the optimal power profile based on its requirements.

1.4 Power Delivery Protocols

Protocol	Support
USB PD 3.0	Supported
PPS	Supported

1.5 Regional Plug Options



Regional Plug Options

Region	Plug Type	Dimensions (W × H × D)
United States (Default)	Type A	Integrated (foldable)
Europe (EU)	Type C	34.6-36.0 × 27.5 × 37 mm
United Kingdom	Type G	48.98 × 39.83 × 22.23-23.23 mm*

Note: Plugs are interchangeable and can be replaced without tools. Make sure the correct plug is attached for your region before use.

2 Usage

The Arduino USB-C Power Supply provides optimal power delivery for USB-C devices and their peripherals. When used with USB-C hubs or dongles, this power supply allows stable operation of connected devices alongside multiple peripherals including displays, USB devices, and network adapters.

2.1 Key Use Cases

- **Direct Device Power:** Direct connection to USB-C devices for development and operation
- **Hub/Dongle Power Delivery:** Powers USB-C hubs and dongles with sufficient headroom for multiple peripherals
- **Fast Charging:** Charges USB-C devices with intelligent power negotiation
- **Multi-Device Support:** Compatible with single-board computers, smartphones, tablets, laptops, and other USB-C devices

> **Important:** When powering USB-C hubs or dongles with multiple high-power peripherals, connect this power supply to the hub's PD input port. The hub will distribute power to the connected device and peripherals simultaneously. Ensure the total power consumption does not exceed 45 W.

2.2 Connection Method

For standalone device operation, connect the power supply's USB-C output directly to your device's USB-C port. For expanded I/O with USB-C hubs or dongles, connect the power supply to the hub's USB-C PD port, then connect the hub to your device.

3 Technical Specifications

3.1 Output Characteristics

3.1.1 Voltage Regulation

Output Voltage	Voltage Range	Regulation
5.0 V	4.6 - 5.25 V	±5%
9.0 V	8.55 - 9.45 V	±5%
12.0 V	11.4 - 12.6 V	±5%
15.0 V	14.25 - 15.75 V	±5%
20.0 V	19.0 - 21.0 V	±5%

3.1.2 Ripple and Noise

Parameter	Specification
Ripple and Noise (all modes)	150 mVp-p maximum (at full load)
Measurement Bandwidth	20 MHz

Measurement Conditions: Ripple and noise measurements are performed with a 20 MHz bandwidth-limited oscilloscope, with the output terminated by a parallel combination of 0.1 µF ceramic capacitor and 10 µF electrolytic capacitor.

3.1.3 Dynamic Response

Parameter	Specification
Turn-on Delay	3 seconds maximum @ 115 V AC, full load
Hold-up Time	5 ms minimum @ 230 V AC, full load
Rise Time	80 ms maximum (10% to 90% of rated output)

3.2 Efficiency

Output Mode	Average Efficiency
5.0 V / 3.0 A	81.39% minimum
9.0 V / 3.0 A	86.62% minimum
12.0 V / 3.0 A	87.40% minimum
15.0 V / 3.0 A	87.73% minimum
20.0 V / 2.25 A	87.73% minimum

No-Load Power Consumption: ≤ 0.1 W @ 115-230 V AC

3.3 Protection Features

Protection Type	Specification
Over Current Protection	105% - 150% of maximum load / auto-recovery hiccup mode
Short Circuit Protection	Output automatically shuts down / auto-recovery when fault removed
Over Voltage Protection	Hiccup protection mode / auto-recovery when fault removed
Over Temperature Protection	Thermal shutdown with auto-recovery

3.4 Operating Conditions

Parameter	Range
Operating Temperature	0 °C - 35 °C
Storage Temperature	-40 °C - 70 °C
Operating Humidity	10% - 90% RH (non-condensing)
Storage Humidity	5% - 95% RH (non-condensing)
Operating Altitude	Up to 5000 m
Storage Altitude	Up to 5000 m

3.5 Safety and EMC Specifications

3.5.1 Electrical Safety

Parameter	Specification
Dielectric Strength	3000 V AC @ 50 Hz, 5 mA max, 60 seconds
Production Hi-Pot Test	3600 V AC @ 50 Hz, 5 mA max, 3 seconds
Leakage Current	0.25 mA maximum @ 230 V AC / 50 Hz
Insulation Resistance	10 MΩ minimum @ 500 V DC, 90% RH
Protection Class	Class II (double insulated)

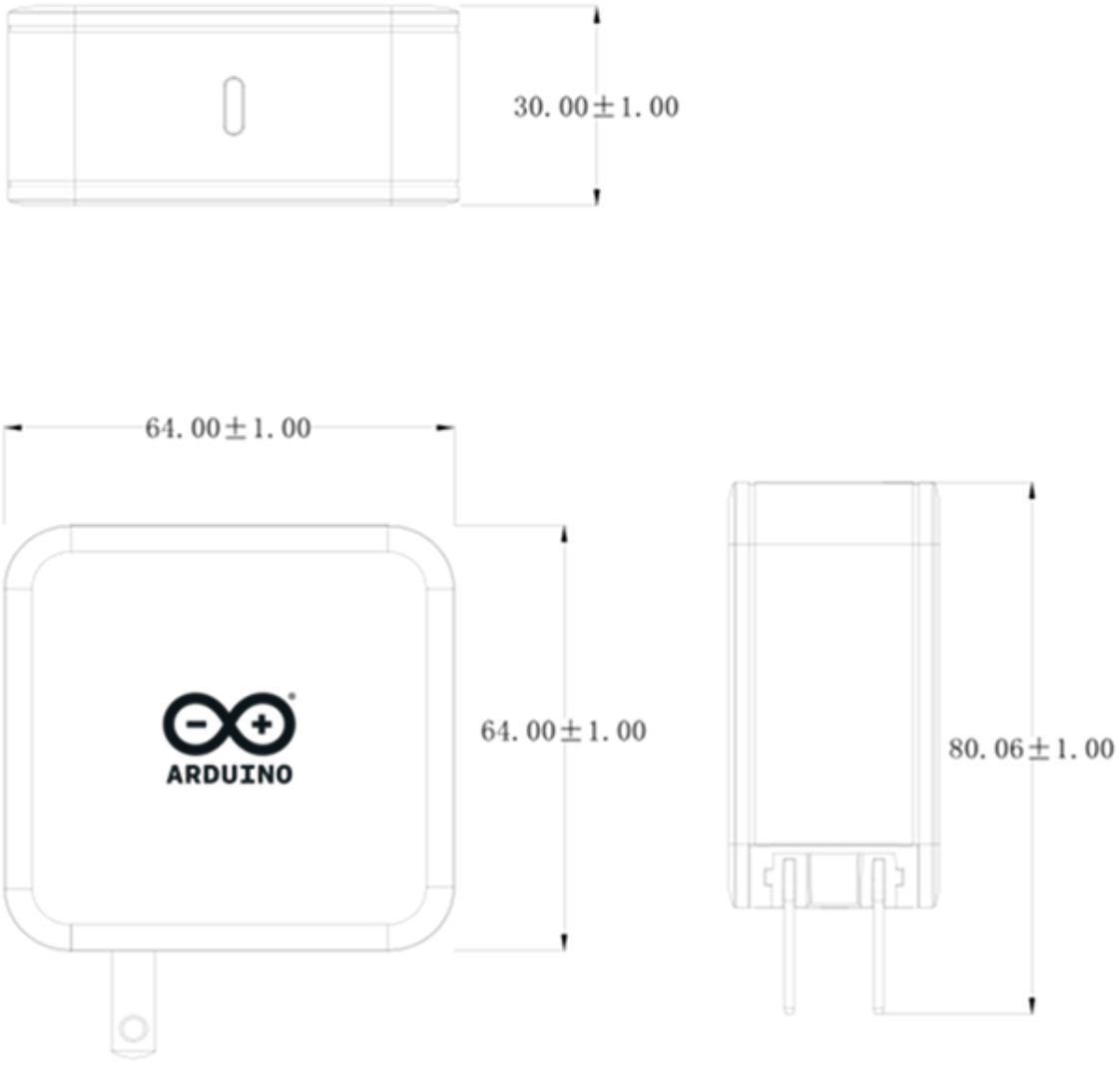
3.5.2 EMI/EMC Compliance

Standard	Compliance
Conducted Emissions	EN55032, FCC Part 15, AS/NZS CISPR32
Radiated Emissions	EN55032, FCC Part 15
ESD Immunity	EN 61000-4-2 (±4 kV contact, ±8 kV air)
EFT/Burst Immunity	EN 61000-4-4 (±1 kV)
Surge Immunity	EN 61000-4-5 (±2 kV common, ±1 kV differential)

4 Mechanical Information

4.1 Dimensions

The power supply features a compact cubic form factor suitable for travel and portable use. The interchangeable plug design allows use in multiple regions without adapters as listed in [this section](#regional-plug-options).



Power Supply Dimensions

Configuration	Dimensions (W × L × H)
With US plug folded	64 × 64 × 30 mm
With US plug unfolded	64 × 80.06 × 30 mm

4.2 Package Contents

- 1× Arduino USB-C Power Supply (45W)
- 1× Interchangeable plug (region-specific: EU, UK, or US)

5 Environmental and Reliability

5.1 Reliability Requirements

Parameter	Specification
MTBF	30,000 hours minimum @ 25°C, 80% load, nominal input
High Temperature Test	Normal operation @ 240 V AC, full load, 35°C ambient
Salt Spray Test	24 hours @ 5% salt concentration, no corrosion on contacts

5.2 Mechanical Stress Tests

Test Type	Specification
Vibration Test	10 - 300 Hz sweep, 1.0 G constant (3.5 mm displacement), 1 hour per axis (X, Y, Z)
Vibration Criteria	No visible damage, normal operation after test
Drop Test	6 faces, 1 meter height onto concrete surface
Drop Criteria	Plugs may bend, housing may scratch, but no structural damage. Normal operation after test

5.3 Environmental Compliance

Regulation
RoHS
REACH

6 Certifications

6.1 Safety Certifications

The Arduino USB-C Power Supply holds the following safety certifications:

Certification	Region	Standard
UL/CUL	USA/Canada	UL62368-1, CSA C22.2
ETL	USA	UL62368
TUV/GS	Europe	EN62368
CE	Europe	EN62368
UKCA	United Kingdom	EN62368
FCC	USA	Part 15 Class B

Note: All certifications are maintained and updated regularly. For the most current certification status, please contact Arduino support or refer to product documentation.

6.2 Declaration of Conformity CE DoC (EU)

English: We declare under our sole responsibility that the products above are in conformity with the essential requirements of the following EU Directives and therefore qualify for free movement within markets comprising the European Union (EU) and European Economic Area (EEA).

French: Nous déclarons sous notre seule responsabilité que les produits indiqués ci-dessus sont conformes aux exigences essentielles des directives de l'Union européenne mentionnées ci-après, et qu'ils remplissent à ce titre les conditions permettant la libre circulation sur les marchés de l'Union européenne (UE) et de l'Espace économique européen (EEE).

6.3 Declaration of Conformity to EU RoHS & REACH

Arduino products are in compliance with Directive 2011/65/EU of the European Parliament and Directive 2015/863/EU of the Council of 4 June 2015 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Substance	Maximum Limit (ppm)
Lead (Pb)	1000
Cadmium (Cd)	100
Mercury (Hg)	1000
Hexavalent Chromium (Cr6+)	1000
Poly Brominated Biphenyls (PBB)	1000
Poly Brominated Diphenyl ethers (PBDE)	1000
Bis(2-Ethylhexyl) phthalate (DEHP)	1000
Benzyl butyl phthalate (BBP)	1000
Dibutyl phthalate (DBP)	1000
Diisobutyl phthalate (DIBP)	1000

Exemptions: No exemptions are claimed.

Arduino products are fully compliant with the related requirements of European Union Regulation (EC) 1907/2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH). We declare none of the SVHCs (https://echa.europa.eu/web/guest/candidate-list-table), the Candidate List of Substances of Very High Concern for authorization currently released by ECHA, is present in all products (and also package) in quantities totaling in a concentration equal or above 0.1%. To the best of our knowledge, we also declare that our products do not contain any of the substances listed on the "Authorization List" (Annex XIV of the REACH regulations) and Substances of Very High Concern (SVHC) in any significant amounts as specified by the Annex XVII of Candidate list published by ECHA (European Chemical Agency) 1907/2006/EC.

6.4 Conflict Minerals Declaration

As a global supplier of electronic and electrical components, Arduino is aware of our obligations with regards to laws and regulations regarding Conflict Minerals, specifically the Dodd-Frank Wall Street Reform and Consumer Protection Act, Section 1502. Arduino does not directly source or process conflict minerals such as Tin, Tantalum, Tungsten, or Gold. Conflict minerals are contained in our products in the form of solder, or as a component in metal alloys. As part of our reasonable due diligence Arduino has contacted component suppliers within our supply chain to verify their continued compliance with the regulations. Based on the information received thus far we declare that our products contain Conflict Minerals sourced from conflict-free areas.

7 FCC Caution

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference

(2) this device must accept any interference received, including interference that may cause undesired operation.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

8 Company Information

Company name	**Arduino S.r.l.**
Company address	Via Andrea Appiani 25, 20900 Monza (Italy)

9 Reference Documentation

No.	Reference	Link
1	Arduino Store	https://store.arduino.cc/

10 Document Revision History

Date	Revision	Changes
27/03/2026	1	First release