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Universal Serial Bus interfaces for data and power - Part 1-2: Common components - USB Power Delivery specification

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Draft	Report on voting
100/4327/CDV	100/4380/RVC

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Universal Serial Bus
Power Delivery Specification

Revision:	**3.2**
Version:	**1.1**
Release Date:	**2024-10**

Revision History

Revision	Version	Comments	Issue Date
1.0	1.0	Initial release Revision 1.0	5 July, 2012
1.0	1.1	Including errata through 31-October-2012	31 October 2012
1.0	1.2	Including errata through 26-June-2013	26 June, 2013
1.0	1.3	Including errata through 11-March-2014	11 March 2014
2.0	1.0	Initial release Revision 2.0	11 August 2014
2.0	1.1	Including errata through 7-May 2015	7 May 2015
2.0	1.2	Including errata through 25-March-2016	25 March 2016
2.0	1.3	Including errata through 11-January-2017	11 January 2017
3.0	1.0	Initial release Revision 3.0	11 December 2015
3.0	1.0a	Including errata through 25-March-2016	25 March 2016
3.0	1.1	Including errata through 12-January-2017	12 January 2017
3.0	1.2	Including errata through 21-June-2018	21 June 2018
3.0	2.0	Including errata through 29-August-2019	29 August 2019
3.1	1.0	Including errata through May 2021	May 2021
3.1	1.1	Including errata through July 2021 This version incorporates the following ECNs: • EPR Clarifications • Define AMS starting point	July 2021
3.1	1.2	Including errata through October 2021 This version incorporates the following ECNs: • Clarify use of Retries • Battery Capabilities • FRS timing problem • PPS power rule clarifications • Peak current support for EPR AVS APDO	October 2021
3.1	1.3	This version incorporates the following ECNs: • Robust EPR Source Operation • EPR Source Caps Editorial • SRC PPS behavior in low current request • Enter USB	January 2022
3.1	1.4	Editorial changes This version incorporates the following ECNs: • Capabilities Mismatch Update • Chunking Timing Issue • OT Mitigation	April 2022

Revision	Version	Comments	Issue Date
3.1	1.5	Editorial changes This version incorporates the following ECNs: • Timer Description Corrections • Change Source_Info Requirements • AMS Update	July 2022
3.1	1.6	Editorial changes This version incorporates the following ECNs: • USB4® V2 Updates • Data Reset Issues • Increase tSenderResponse • PPS Power Limit Bit Update • Support for Asymmetric Mode • Timer Description Corrections Revisited	October 2022
3.1	1.7	Editorial Changes This version incorporates the following ECNs: • Data Reset Invalid Reject Handling • Source request • Source Transition • EPR Entry	January 2023
3.1	1.8	Editorial Changes This version incorporates the following ECNs: • Slew rate exemption for Power Role Swap. • EUDO cable speed clarification. • Update to PPS Requirements. • Deprecate Interruptibility. • Section 7.3 restructure and update.	April 2023
3.1	1.9	Editorial Changes	July 2023

Revision	Version	Comments	Issue Date
3.2	1.0	This version incorporates the following ECNs: • VDM-use Conditions. • tTypeCSinkWaitCap. • tFirstSourceCap Clarification • Hard Reset Clarification. • Unrecognized Country Code • EPR Entry Process-1 • SPR AVS Definition • EPR Power Rules Clarifications	October 2023
3.2	1.1	This version incorporates the following ECNs: • Power Transition time from EPR to PR_Swap • Capabilities Mismatch Update • Deprecate GotoMin and GiveBack Features and Update Power Reserve • EPR Entry requirements Clarification • EPRMDO and Entry Clarification. • Remove 10.2.4 power sharing between ports • Source PDP rating field clarifications • Source Power Rules update. • Source_Info Message Clarifications. • Correction to BMC description. • EPR Source cap clarification. • Delaying of VCONN Swap. • EPR_Request in SPR Mode. • Generic transition diagram. • Removing the usage of Ping message • Sink Standby • Source Info Support	October 2024

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Max Guan	Nexperia B.V.
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Andrew Yoo	ON Semiconductor
Brady Maasen	ON Semiconductor
Bryan McCoy	ON Semiconductor
Christian Klein	ON Semiconductor
Cor Voorwinden	ON Semiconductor
Edward Berrios	ON Semiconductor
Michael Smith	ON Semiconductor
Oscar Freitas	ON Semiconductor
Tom Duffy	ON Semiconductor
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Craig Wiley	Parade Technologies Inc.
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Jay Tu	Power Forest Technology Corporation
Adel Lahham	Power Integrations
Aditya Kulkarni	Power Integrations
Akshay Nayaknur	Power Integrations
Amruta Patra	Power Integrations
K R Rahul Raj	Power Integrations
Kaushik Raam	Power Integrations
Rahul Joshi	Power Integrations
Ricardo Pregiteer	Power Integrations
Shruti Anand	Power Integrations
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George Paparrizos	Qualcomm, Inc
Giovanni Garcea	Qualcomm, Inc
Jack Pham	Qualcomm, Inc
James Goel	Qualcomm, Inc
Joshua Warner	Qualcomm, Inc
Karyn Vuong	Qualcomm, Inc
Lalan Mishra	Qualcomm, Inc
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Vamsi Samavedam	Qualcomm, Inc
Vatsal Patel	Qualcomm, Inc
Chris Sporck	Qualcomm, Inc.
Craig Aiken	Qualcomm, Inc.
Narendra Mehta	Qualcomm, Inc.
Terry Remple	Qualcomm, Inc.
Will Kun	Qualcomm, Inc.
Yoram Rimoni	Qualcomm, Inc.
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Tsung-Peng Chuang	Realtek Semiconductor Corp.
Atsushi Mitamura	Renesas Electronics Corp.
Bob Dunstan	Renesas Electronics Corp.
Brian Allen	Renesas Electronics Corp.
Dan Aoki	Renesas Electronics Corp.
Fengshuan Zhou	Renesas Electronics Corp.
Hajime Nozaki	Renesas Electronics Corp.
John Carpenter	Renesas Electronics Corp.
Kiichi Muto	Renesas Electronics Corp.
Masami Katagiri	Renesas Electronics Corp.
Nobuo Furuya	Renesas Electronics Corp.
Patrick Yu	Renesas Electronics Corp.
Peter Teng	Renesas Electronics Corp.
Philip Leung	Renesas Electronics Corp.
Steve Roux	Renesas Electronics Corp.
Tetsu Sato	Renesas Electronics Corp.
Toshifumi Yamaoka	Renesas Electronics Corp.
Yimin Chen	Renesas Electronics Corp.
Chunan Kuo	Richtek Technology Corporation
Heinz Wei	Richtek Technology Corporation

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Hidenori Nishimoto	Rohm Co. Ltd.	Shinichi Hirata	Sony Corporation
Kris Bahar	Rohm Co. Ltd.	Amanda Hosler	Specwerkz
Manabu Miyata	Rohm Co. Ltd.	Bob Dunstan	Specwerkz
Ruben Balbuena	Rohm Co. Ltd.	Brad Saunders	Specwerkz
Takashi Sato	Rohm Co. Ltd.	Diane Lenox	Specwerkz
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Tong Kim	Samsung Electronics Co. Ltd.	Patrizia Milazzo	ST-Ericsson
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Ronald Rueckert	Seagate Technology LLC	Massimo Panzica	STMicroelectronics
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Kok Hong Soh	Silicon Laboratories, Inc.	Prishkit Abrol	Synopsys, Inc.
Sorin Badiu	Silicon Laboratories, Inc.	Zongyao Wen	Synopsys, Inc.
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Jinisha Patel	SiliConch Systems Private Limited	Annamalai Kasthuri	Texas Instruments
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Pavitra Balasubramanian	SiliConch Systems Private Limited	Bing Lu	Texas Instruments
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Satish Anand Verkila	SiliConch Systems Private Limited	Grant Ley	Texas Instruments
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Vishnu Pusuluri	SiliConch Systems Private Limited	Ingolf Frank	Texas Instruments
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Ken Gay	SMSC	Javed Ahmad	Texas Instruments
Richard Wahler	SMSC	Jean Picard	Texas Instruments