

CY4500-EPR EZ-PD™ Protocol Analyzer Utility user guide

About this document

Scope and purpose

This user guide describes the features of EZ-PD[™] Protocol Analyzer Utility. The document also provides instructions on the installation and usage of EZ-PD[™] Protocol Analyzer Utility.

Intended audience

This document is intended for anyone using the CY4500-EPR kit.



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The board at a glance

1 The board at a glance

The CY4500-EPR EZ-PD[™] Protocol Analyzer supports USB-PD protocol analysis and USB Type-C specifications. It supports the following power ranges:

- Standard power range (SPR) 21 V at 5 A
- Extended power range (EPR) 48 V at 5 A

It performs nonintrusive probing and captures accurate protocol messages on the CC line. This analyzer consists of Infineon's programmable MCU (PSOC[™] 5LP), which monitors data on the CC lines and sends this data to the host application over a USB interface. The Type-C plug and Type-C receptacle on this analyzer provide a pass-through for the Power Delivery (PD) packets transmitted between each Type-C PD connection. The MCU processor taps these PD packets without disturbing the system and transfers them over the USB interface to a PC running the host application.

Note: EZ-PD[™] Analyzer Utility supports decoding of PD packets per the USB PD Specification Revision 3.2, V1.0.

1.1 Scope of supply

The CY4500-EPR EZ-PD[™] Protocol Analyzer consists of the following contents:

- CY4500-EPR EZ-PD[™] Protocol Analyzer board enclosed in a transparent casing.
- USB 2.0 Type-A to Micro-B Cable
- Six jumper wires
- Quick Start Guide

1.2 Block diagram

The following image shows the block diagram of the CY4500-EPR EZ-PD[™] Protocol Analyzer. The PSOC[™] 5LP controller decodes the USB-PD messages on the CC lines in a nonintrusive manner, and to measure the voltage and current flowing through the USB interface. These messages are displayed on the EZ PD[™] Analyzer Utility application.



Figure 1 Block diagram



The board at a glance

1.3 Main features

- Supports power measurement in the EPR range (48 V at 5 A)
- Captures protocol message on CC lines
- Capable of decoding both the SPR/EPR messages

1.4 Board parameters and technical data

The board comprises a Type-C plug at one end and a Type-C receptacle at the other, which connects to the Type-C device or system under test. The board is powered over the USB micro-B port, which provides 5 V, 500 mA. The board also consists of one LED to indicate the power status. Besides this, it has connector headers brought out for the GPIOs, CC lines, VBUS, and SBU lines from the USB-PD system.

Figure 2, Figure 3, and Figure 4 show the front view, back view, and side view respectively of the CY4500-EPR EZ-PD[™] Protocol Analyzer board. Table 1 contains their detailed description. Headers J1 and J8 are located on the back side of the board. Ensure that the exposed header pins of J1 and J8 do not get shorted. Shorting these exposed pins may result in a functional failure or unexpected behavior of the CY4500-EPR EZ-PD[™] Protocol Analyzer.



Figure 2 CY4500-EPR EZ-PD™ Protocol Analyzer board (front view)



Figure 3 CY4500-EPR EZ-PD[™] Protocol Analyzer board (rear view)



The board at a glance



Figure 4 CY4500-EPR EZ-PD[™] Protocol Analyzer board (side view)

The following table contains the details about the pinouts and the connector details of the connectors present on CY4500-EPR board. Connectors J1 and J8 can be used to probe the Type-C signals and the message trigger signals using the provided jumper wires.

Table 1	ole 1 Connector details				
Connector	Description				
J1	USB Type-C signal header				
	Pin 1: CC1				
	Pin 2: CC2				
	Pin 3: SBU1				
	Pin 4: SBU2				
	Pin 5: VBUS				
	Pin 6: GND				
J2	Type-C receptacle				
J3	Type-C plug				
J7	USB Micro-B connector				
J8	Message trigger header				
	Pin 1: SOM				
	Pin 2: EOM				
	Pin 3: MTR				

Note: 1. Header J8 pins are used for triggering. The trigger functionality requires EZ-PD[™] Protocol Analyzer Utility support. Contact Infineon Sales for more details.

2. The EZ-PD[™] Protocol Analyzer board is protected using a transparent casing. Do not remove the board from the casing while using the Analyzer.

3. If multiple CY4500-EPR devices are connected to the laptop, press the tick icon on the EZ-PD[™]Protocol Analyzer Utility. This makes the LED on the connected device blink in red color.



Installation

2 Installation

2.1 Windows installation

To install the EZ-PD[™] Protocol Analyzer software in Windows, do the following:

 Download the latest EZ-PD[™] Protocol Analyzer Utility software setup file from EZ-PD[™] Protocol Analyzer Utility. This package contains the software for running the analyzer and the relevant documentation (user guides, Quick Start Guides, and release notes). Double-click on the executable to start the installation. Read the license agreement and click the "I accept the agreement" radio button when the screen shown in Figure 5 appears.

Setup - EZ-PD Protocol Analyzer Utility 4.0.0.84 -	×
icense Agreement Please read the following important information before continuing.	
Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.	
CYPRESS SOFTWARE LICENSE AGREEMENT This document is a legal agreement (the "Agreement") between you ("Licensee") and Cypress Semiconductor Corporation ("Cypress"). Cypress design and development tools include software (the "Technical Package") that may be distributed on CD-ROM, through the internet, as e-mail attachments, or through other means of delivery. Please read this Agreement carefully before opening software packet(s) or downloading, installing, or using the Technical Package. By opening the software packet(s) or downloading, installing, or using the Technical Package, you agree to be bound by the terms of this Agreement and any applicable open source license agreement.	1
• I accept the agreement \bigcirc I <u>d</u> o not accept the agreement	
<u>N</u> ext C	ancel





Installation

2. Select the required installation location and click **Next** to start the installation. The default location is *C:\Infineon\Tools\EZ-PD Protocol Analyzer Utility*.

Setup - EZ-PD Protocol Analyzer Utility 4.0.0.84	_		×
Select Destination Location Where should EZ-PD Protocol Analyzer Utility be installed?			
Setup will install EZ-PD Protocol Analyzer Utility into the following folder.			
To continue, click Next. If you would like to select a different folder, click Browse.			
C:\Infineon\Tools\EZ-PD Protocol Analyzer Utility	Bro	owse	
At least 100 6 MP of free disk space is required			
Back Nex	t	Can	cel

Figure 6 Install the software – Select the installation folder

CY4500-EPR EZ-PD™ Protocol Analyzer Utility user guide



Installation

3. Check the "Create a desktop" shortcut if you want to create a shortcut on the desktop and click **Next**.

Setup - EZ-PD Protocol Analyzer Utility 4.0.0.84 Select Additional Tasks Which additional tasks should be performed? Select the additional tasks you would like Setup to perform while installing EZ-PD Protocol Analyzer Utility, then click Next. Additional shortcuts: Create a desktop shortcut Back Next Cancel					
Select Additional Tasks Which additional tasks should be performed? Select the additional tasks you would like Setup to perform while installing EZ-PD Protocol Analyzer Utility, then click Next. Additional shortcuts: Create a desktop shortcut Back Next Cancel	V Setup - EZ-PD Protocol Analyzer Utility 4.0.0.84		_		×
Which additional tasks should be performed? Select the additional tasks you would like Setup to perform while installing EZ-PD Protocol Analyzer Utility, then click Next. Additional shortcuts: Create a gesktop shortcut Back Next	Select Additional Tasks				
Select the additional tasks you would like Setup to perform while installing EZ-PD Protocol Analyzer utility, then click Next. Additional shortcuts: Create a desktop shortcut Back Next	Which additional tasks should be performed?				Č)
Additional shortcuts: Create a desktop shortcut Back Next Cancel	Select the additional tasks you would like Setup to perform while installir Utility, then click Next.	ng EZ-PD Proto	col Analy	zer	
Create a desktop shortcut	Additional shortcuts:				
Back Next Cancel	Create a <u>d</u> esktop shortcut				
Back Next Cancel					
<u>B</u> ack <u>N</u> ext Cancel					
Back Next Cancel					
<u>Back</u> <u>N</u> ext Cancel					
<u>B</u> ack <u>N</u> ext Cancel					
<u>B</u> ack <u>N</u> ext Cancel					
<u>B</u> ack <u>N</u> ext Cancel					
<u>B</u> ack <u>N</u> ext Cancel					
<u>B</u> ack <u>N</u> ext Cancel					
<u>B</u> ack <u>N</u> ext Cancel					
<u>B</u> ack <u>N</u> ext Cancel					
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Figure 7 Install the software – Create a desktop shortcut

CY4500-EPR EZ-PD™ Protocol Analyzer Utility user guide



Installation

4. Figure 8 shows the installation progress.

Setup - EZ-PD Protocol Analyzer Utility 4.0.0.84 - X
Installing Please wait while Setup installs EZ-PD Protocol Analyzer Utility on your computer.
Extracting files C:\Infineon\Tools\EZ-PD Protocol Analyzer Utility\jre\bin\vcruntime140.dll
Cancel

Figure 8 Install the software – Installation in progress



Installation

5. Check the following buttons if you want to launch the application or view the user guide and click **Finish**.



Figure 9 Install the software – Complete the installation



Installation

6. After the installation is complete, the contents are available at the following location: <*Install location*>*EZ-PD Protocol Analyzer Utility*.

													- a v
CY4500 EZ-PD [™] Protocol Analy File Actions Window Help	vzer Utility [Device: EPR]												- B X
The CY4500 EZ-PD ¹⁴ Protocol A	inalyzer kit can measure volta	e up to 48V only.									CC1: 0mV CC2: 0mV	V: 0mV A: 0mA	
USB Packet Message ×											🗖 Details 🗵		- 0
Status SOP	Message Msg	Data Ro Pov	wer Obj C	Rev Durat	i Delta(Vbus	(V) Data	Start Tim End Time	-			Θ		
- T	т т	т т	T 1	T	тт	T	T T	T			Name	Value	
Showing 0 of 0 rows					First Previo	us Next Last				File 0 of 0			
Graphical ×										• 8	Payload ×		° 0
											Byte Index	Value	
CC1 CC2 VBUS	AMP X Scale: 100ms	Siv 🗸 ¥: Ou		,	6: 1m	Δ¥: 0		ΔΧ: 0		* *			
1.05				_					1.05	1.05	1		
1.00 -									- 1.00	- 1.00			
0.90									0.90	- 0.90			
0.85									0.85	- 0.85			
0.75									0.75	0.75			
€ 0.65									0.65	0.65 2			
0.60									0.60	0.60			
0.50									0.50	0.50			
0.45									0.45	0.45			
0.35									- 0.35	- 0.35			
0.25									0.30	0.25			
0.20									0.20	0.20			
0.10									0.10	0.10			
0.05									0.05	0.05			
0.00 0.0	05 0.10 0.15 0	20 0.25 0.	30 0.35 0	.40 0.45	0.50 0.55	0.60 0.65 0.70 0.	75 0.80 0.85 0.90	0.95 1.00 1	.05	2.00			
				_	Time(us)	_							
EZ-PD Analyzer is Connected				- cc	Time(us)	VBUS AMP						Convict #	2023 by Infreen Technologies, All rights reserved.

Figure 10 EZ-PD[™] Protocol Analyzer Utility window

Note: For EZ-PD[™] Protocol Analyzer Utility support on Mac contact Infineon Sales for more details.



3 Analyzer operation

This section describes how to run the CY4500-EPR EZ-PD[™] Protocol Analyzer Utility, and how to update the firmware of the PSOC[™] 5LP device of the analyzer. Complete the installation as explained in the Installation section before proceeding.

3.1 Capturing PD packets using CY4500-EPR EZ-PD[™] Protocol Analyzer

The steps to run the CY4500-EPR EZ-PD[™] Protocol Analyzer to capture the PD packets on the CC bus are as follows:

- 1. Using a USB Micro-B cable, connect the USB Micro-B receptacle (Connector J7) of the CY4500-EPR EZ-PD[™] Protocol Analyzer board to the host PC. LED1 of the CY4500-EPR EZ-PD[™] Protocol Analyzer board blinks in white color.
- 2. Connect the USB Type-C plug (Connector J3) of the CY4500-EPR EZ-PD[™] Protocol Analyzer board to the Type-C host device. In this user guide, the CY7113 EZ-PD[™] PMG1-S3 prototyping kit (not provided with this analyzer) is used as a Type-C PD sink device as an example.
- 3. Verify that the setup looks similar to the image shown in Figure 11.



Figure 11 Setup for operating CY4500-EPR EZ-PD™ Protocol Analyzer



4. On the host PC, launch the EZ-PD[™] Analyzer Utility from

Start > **All Programs** > **Infineon EZ-PD™ Analyzer Utility**. The EZ-PD™ Analyzer Utility's start-up page looks similar to the image shown in Figure 12.



Figure 12 EZ-PD[™] Analyzer Utility start-up page

5. Click on the **Start Capturing** icon to start the CC packet capturing (USB-PD source and sink must be connected after the capture has started or some messages can go missing if we capture after the connection is done).

The Start capturing icon then changes to the **Stop Capturing** icon \bigcirc once the capturing starts. Alternatively, you can also start capturing data by clicking on **Actions** > **Start Capturing** from the menu bar. The status bar at the bottom of the utility window shows the message "started capturing" (similar to the status bar at the bottom of Figure 12).

- 6. Once the capture starts, LED1 on the CY4500-EPR EZ-PD[™] Protocol Analyzer will turn green to indicate the same.
- 7. Connect a USB Type-C power adapter (not provided with the analyzer) to the USB Type-C receptacle (Connector J2) of the CY4500-EPR EZ-PD[™] Protocol Analyzer board. Verify that the setup looks similar to the image shown in Figure 13. The USB Type-C power adapter mentioned here is just an example. Any USB Type-C device can be used in its place.





Figure 13 Complete setup of CY4500-EPR EZ-PD[™] Protocol Analyzer

8. Upon connecting the USB Type-C power adapter, the utility running on the host PC automatically displays a string of messages on the screen. Make sure that the hardware connections are not loose or do not get disconnected in the middle of a data capturing event. The EZ-PD[™] Analyzer Utility will display messages as shown in Figure 14.

			salyzer kit can measure v	oltage up to 48V	only.												CC1: 1,466mV CC2: 0mV V	27,205mV A: 0mA	
🗆 USB P	acket Mess	age ×														- 0	Details ×		
	Status	SOP	Message I	Msg Data F	o_ Power.	ОЫ С	Rev	Durati	Delta(Vbus(V)	Data	Start Tim	End Time				Θ		
_	100107-00	T	T T	T	T	T	1 1	T	1	27.017	0.0	T	T T				Name	Value	
	OK OK	SOP SOP	EXTENDED CO.	5 UFP	SNK	0	v1	633	30.855	27,193	0x8C90 0x2 2 bytes Linchunked	130879	131512				✓ MESSAGE HEADER REVISION 3 SOP	0x8c90	
3	OK	SOP	GOODCRC (5 DEP	SRC	0	¥2	508	46	27,169	0xD61	131658	132166				Extended	Yes	
4	OK	SOP	EXTENDED_CO	B DEP	SRC	0	v3	642	57	27,134	0x8780 0x2 2 bytes Unchunked	132823	133465				Data objects Merropa id	6	
5	OK	SOP	GOODCRC :	UFP	SNK	0	v2	500	43	27,146	0x641	133608	134108				Power role	SNK	
6	OK	SOP	EXTENDED_CO 1	I UFP	SNK	0	v3	632	80,857	27,181	0x8E90 0x2 2 bytes Unchunked	514965	515597				Specification revision	v3	
7	OK	SOP	GOODCRC	DEP	SRC	0	v2	508	46	27,146	0xF61	515743	516251				Data role	UFP	
B	OK	SOP	EXTENDED_CO 4	DFP	SRC	0	v3	642	176	27,157	0x8980 0x2 2 bytes Unchunked	516727	517369				Message type	EXTENDED_CONTROL_MSG	
10	OK OK	SOP	EVENDED CC 4	UEP	SNK	0	v2	613	43	27,157	0x841	517512	518012				Chunked	No	
11	a la	SOP	GOODCRC I	000	SDC	0	¥3	508	46	27.134	0x161	899711	000210				Chunk number	0	
12	OK I	SOP	EXTENDED CO.	DEP	SRC	0	12	641	75	27.146	0x880 0x2 2 bytes Linchunked	900894	901535				Request chunk	No	
13	OK	SOP	GOODCRC	5 UFP	SNK	0	v2	496	47	27,134	0xA41	901682	902178				Reserved	0x0	
14	OK	SOP	EXTENDED_CO	UFP	SNK	0	¥3	633	80.808	27,169	0x8290 0x2 2 bytes Unchunked	1282986	1283619				Data size	0:2 (2)	
15	OK	SOP	GOODCRC	DFP	SRC	0	v2	508	45	27,146	0x361	1283764	1284272				Extended Control Message Type Message type	FPR KeenAlive	
16	OK	SOP	EXTENDED_CO	5 DFP	SRC	0	¥3	642 6	74	27,157	0x8D80 0x2 2 bytes Unchunked	1284946	1285588				Data	0x0	
17	OK	SOP	GOODCRC 6	5 UFP	SNK	0	v2	500	44	27,169	0xC41	1285732	1286232						
18	OK	SOP	EXTENDED_CO	2 UFP	SNK	0	v3	633	80,636	27,181	0x8490 0x2 2 bytes Unchunked	1666868	1667501						
19	OK	SOF	GOODERC	DFP	SNC	0	v2	508	43	27,134	0.561	1667646	1668154						
🗆 Graph	ical ×															° 0	Payload ×		° 0
CC1	CC2	VBUS	AMP X Scale: 10	Dms/div - ¥: 1	u			X : 1m			Δ¥ : 0		تم	€ 0			Byte Index	Value 0x03	
_						_	_		_						, 1,000	_	1	0x00	
	1,50	HING - HINGTON	irous (120879) Bruf	Time -131812										- 28,000	- 950				
		10 ·												- 26,000	- 900				
	1,40													- 24,000	800				
	1,30	ю ·												- 22,000	- 750				
	1,40	io -																	
	1,40 1,30 1,20 1,10													- 20,000	- 700				
ş	1,40 1,30 1,20 1,10													- 18,000 <	- 700 - 650	2			
() film()	1,40 1,30 1,20 1,10 1,00 90	10 - 10 - 10 - 10 -												- 18,000	- 700 - 650 - 600 - 550	AMP-			
2 - VoltimVI	1,40 1,30 1,20 1,10 1,00 90 80	10												- 20,000 - 18,000 - 16,000 - 005 - 14,000 - 005	- 700 - 650 - 600 - 550 - 500	AMP - AM			
VICC2 - VoltimVI	1,40 1,30 1,20 1,10 1,00 90 80 70													20,000 18,000 16,000 14,000 12,000	700 650 550 500 450	AMP - AMP(m)			
CC1/ICC2 - VoltimVI	1,40 1,30 1,20 1,10 1,00 90 80 70 60	10 - 10 - 10 - 10 - 10 - 10 - 10 -												- 20,000 - 18,000 - 16,000 VBLS - 14,000 VBLS - 12,000 - 10,000	700 650 550 500 450 400 350	AMP - AMP(mA)			
CC1/CC2 - VoltimM	1,40 1,30 1,20 1,10 1,00 90 80 70 60 50													- 20,000 - 18,000 - 16,000 - 14,000 - 12,000 - 10,000 - 8,000	700 650 550 500 450 400 350 300	AMP - AMP(mA)			
CC1/CC2 - VoltimVi	1,40 1,30 1,20 1,10 1,00 80 70 60 50 40													- 20,000 - 18,000 - 16,000 - 14,000 - 12,000 - 10,000 - 8,000 - 8,000	- 700 - 650 - 550 - 500 - 450 - 450 - 350 - 350 - 300 - 250	AMP - AMP(mA)			
CC1/CC2 - VoltimV	1,40 1,30 1,20 1,10 1,00 80 70 60 50 40 30	10 - 10 -												- 20,000 - 18,000 - 16,000 - 14,000 - 12,000 - 12,000 - 10,000 - 8,000 - 6,000	- 700 - 650 - 500 - 500 - 450 - 450 - 400 - 350 - 300 - 250 - 250 - 150	AMP - AMP(mA)			
CC//CC2 - VoltimV/	1,40 1,30 1,20 1,10 90 80 70 60 50 40 30 20	10 - 10 -												- 20,000 - 18,000 - 18,000 - 14,000 - 12,000 - 10,000 - 10,000 - 6,000 - 6,000 - 4,000	- 700 - 650 - 500 - 500 - 450 - 450 - 400 - 350 - 350 - 250 - 250 - 150 - 100	AMP - AMP(mA)			
CC/JCC2 - VoltimV	1,40 1,30 1,20 1,10 90 80 70 60 50 40 30 20	10 - 10 -												- 20,000 - 18,000 - 16,000 VBG - 14,000 VBG - 12,000 - 10,000 - 8,000 - 6,000 - 4,000 - 2,000	- 700 - 650 - 550 - 550 - 450 - 450 - 350 - 350 - 250 - 250 - 100 - 50	AMP - AMP(mA)			

Figure 14 EZ-PD[™] Analyzer Utility showing PD packets captured on the CC line



- 9. The EZ-PD[™] Analyzer Utility displays the captured messages (sent and received) between the USB Type-C host device and the USB Type-C client device on the CC line. Click on the icon to stop capturing messages. Alternatively, you can stop capturing data by clicking on **Actions** > **Stop Capturing** from the menu bar. Upon clicking this icon, the status bar at the bottom of the utility window displays **EZ-PD[™] Analyzer is stopped**.
- 10. Save the captured set of messages by clicking on **File** > **Save**. These files can be saved in the .*ccgx*, .*xlsx*, or .*csv* formats, but only the file saved in the .*ccgx* format can be opened using the EZ-PD[™] Analyzer Utility by clicking **File** > **Open**.
- 11. To clear a captured group of messages, click either the **Clear Data** icon or click **Actions** > **Clear Data** from the menu bar. This clears all the captured group of messages. If they are not saved prior to clicking the Clear Data icon, then these messages are lost.
- 12. If the hardware shown in Figure 13 is not stable or gets disconnected at any point, the status bar at the bottom of the utility window shows the message **EZ-PD[™] Analyzer is disconnected.**
- 13. For more information on how to use the EZ-PD[™] Analyzer Utility, see the EZ-PD[™] Analyzer Utility User Manual by clicking **Help** > **User Manual**.

3.2 Updating PSOC[™] 5LP device firmware on the CY4500-EPR EZ-PD[™] Protocol Analyzer

The PSOC[™] 5LP device firmware, present on the CY4500-EPR EZ-PD[™] Protocol Analyzer board, can be updated using the **Firmware_Update_Tool Utility**.

3.2.1 Updating firmware using EZ-PD[™] Analyzer Utility for Windows

- 1. Using a USB Micro-B cable, connect the USB Micro-B receptacle (Connector J7) of the CY4500-EPR EZ-PD[™] Protocol Analyzer board to the host PC. LED1 of the CY4500-EPR EZ-PD[™] Protocol Analyzer board blinks in white color.
- 2. On the host PC, launch the download firmware application from *<install location>\EZ-PD Protocol Analyzer Utility\Firmware_Update_Tool\ EZPD_Firmware_Update_Tool.* The utility's start-up page looks similar to the image shown in Figure 15.
- 3. Check the current firmware loaded on the EZ-PD[™] Protocol Analyzer hardware by selecting **Get Firmware Version** as shown in Figure 15. A dialog box showing the current firmware version appears.

		EZ-PD ^{IM} Protocol Analyzer Firmware Update Utility X
Download Status	A	Firmware Version: 3.0.0.2
Get Firmware Version Load File Program	Exit	ОК

Figure 15 Get the current firmware version and dialog box

CY4500-EPR EZ-PD[™] Protocol Analyzer Utility user guide



Analyzer operation

- 4. Click **OK** to return to the main menu. Proceed with the rest of the procedure to download the firmware if a new version of the firmware is available.
- 5. Upon executing step 4, the **Download Firmware** window opens as shown in Figure 16. The device enters the bootloader mode by default.

Download Status	 	
		-
		-

Figure 16 "Download Firmware" window

6. Click **Load File...** as shown in Figure 16 and select the CY4500-EPR firmware file in *.cyacd* format as shown in Figure 17. Click **Open**. The binary file provided with the analyzer is available at the following location:

CY4500-EPR device firmware:

<Install location>\ EZ-PD Protocol Analyzer Utility\Firmware_Update_Tool\CY4500_EPR_Firmware

CY4500 device firmware:

<Install Directory>\ EZ-PD Protocol Analyzer Utility\Firmware_Update_Tool\CY4500_Firmware

Figure 17 Selecting the CY4500-EPR firmware file

CY4500-EPR EZ-PD™ Protocol Analyzer Utility user guide



Analyzer operation

7. Click **Program** to download the firmware to the device.

Download started at 29-02-2	024 17:47:52	
Firmware downloaded succ	essfully. 024 17:47:57	
Download ended at 25-02-2	024 17.47.37	

Figure 18 Programming the CY4500-EPR firmware file

8. Once the message comes up that the download ended, reset the device by disconnecting the Micro-B cable and connecting again.



References

References

[1] USB PD Specification Revision 3.2, V1.0



Glossary

Glossary

CC configuration channel

EoM end of message

EPR Extended Power Range

GPIO general-purpose input output

LED *light emitting diode*

Msg. ID message identification

MTR message trigger

MCU microcontroller unit

Obj. Count *object count*

PD Power Delivery

QSG *Quick Start Guide*

SPR Standard Power Range

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Glossary

SOM start of message

SOP

start of packet

SBU

sideband use



Revision history

Revision history

Document revision	Date	Description of changes
**	2024-08-29	Initial release

Trademarks

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