Description

The AmPLink™ USB Adapter provides the hardware interface between the AnDAPT AmPDB1 Demonstration Board and a PC. It is used in conjunction with AmPLink Control software to program and control devices on the demonstration board.

Key Features

AmP Device Control
- SPI, I²C control

Memory Programmer
- Program AmP and flash devices
- New devices can easily be added to a memory device database

Power
- USB powered
- 5V and 3.3V outputs with current limiting

Software
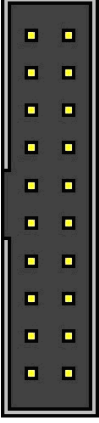- Windows and Linux user interfaces

Connectors
- USB type B
- 20 pin, male, keyed, 0.1" pitch

Accessories
- USB type-B female to USB type-A male 3' cable
- 20-way, female to female, IDC cable assembly. Maximum length 4"/100mm.

Pin Out

GND –	1	2	– CS2
AMP_SCLK –	3	4	– GND
AMP_SI –	5	6	– CS1
CS3 –	7	8	– CS4
AMP_Config –	9	10	– FLASH_RST
AMP_SO –	11	12	– GND
3.3V –	13	14	– AMP_SCL
FLASH_WP –	15	16	– AMP_SDA
AMP_ALERT –	17	18	– AMP_CTRL
AMP_EN –	19	20	– VBUS

Functional Description

The AmPLink USB Adapter provides SPI, I2C and GPIO interfaces to the AmP evaluation board. The SPI bus is used to control the AmP device and program both AmP and flash memory. The I^{2}C bus provides control and monitoring of the power supply functions of the AmP device. GPIO is used for evaluation board configuration and to support functions on the SPI interface. All pins use 3.3V logic except where otherwise stated.

Pin Functional Description

SPI	
AMP_SCLK	Clock output Hi-Z when not in use
AMP_SI	MOSI output when communicating with AmP devices MISO input when programming flash devices Hi-Z when not in use
AMP_SO	MISO input when communicating with AmP devices MOSI output when programming flash devices Hi-Z when not in use
CS1, CS2, CS3, CS4	Chip select outputs Hi-Z when not in use
I²C	
AMP_SCL	Clock output Open drain with internal 2.2kΩ pull up resistor
AMP_SDA	Bidirectional data line Open drain with internal 2.2kΩ pull up resistor
AMP_ALERT	alert signal input
AMP_CTRL	control signal output
Configuration	
AMP_EN	AmP device enable output
AMP_Config	Configures AmP device (see AnDAPT_AmP_Platform datasheet)
FLASH_WP	Flash write protect output
FLASH_RST	Flash reset output
Power	
GND	Connected to USB GND and shield
VBUS	5V output with 0.5A to 0.7A current limiting
3.3V	3.3V output with 0.5A current limiting

AmPLink12 Adapter Extension

The AmPLink12 Adapter provides reduced pin counts for applications not requiring all the functionality of the 20-pin interface. This enables the application to have a smaller footprint with fewer connections. Three Standard Interface pinouts are recommended and supported as defined follows:

Standard Interface	Total Pins	SPI	I2C	pin pitch	cable length
AmPLink12	12	yes	yes	0.1 inch	4 inches
AmPLink12 Basic	6	yes	no	0.1 inch	4 inches
AmPLink12 Basic Edge	6	yes	no	0.1 inch	4 inches

AmPLink Pinouts

AmLink Cable Pin Table

GND	1		2	CS2	
AMP_SCLK	3		4	GND	
AMP_SI	5		6	CS1	
CS3	7		8	CS4	
AMP_Config	9		10	FLASH_RST	
AMP_SO	11		12	GND	
3.3V	13		14	AMP_SCL	
FLASH_WP	15		16	AMP_SDA	
AMP_ALERT	17		18	AMP_CTRL	
AMP_EN	19		20	VBUS	

AmLink12 Adapter Pin Table

Basic **I2C**

AMP_SI	1	2	GND	
CS1	3	4	AMP_SDA	
AMP_SCLK	5	6	AMP_ALERT	
GND	7	8	AMP_SCL	
AMP_SO	9	10	AMP_CTRL	
AMP_Config	11	12	FLASH_RST	

AmLink12 Adapter Basic Pin Table

Basic

AMP_SI	1
CS1	2
AMP_SCLK	3
GND	4
AMP_SO	5
AMP_Config	6

AmLink12 Adapter Basic Edge Pin Table

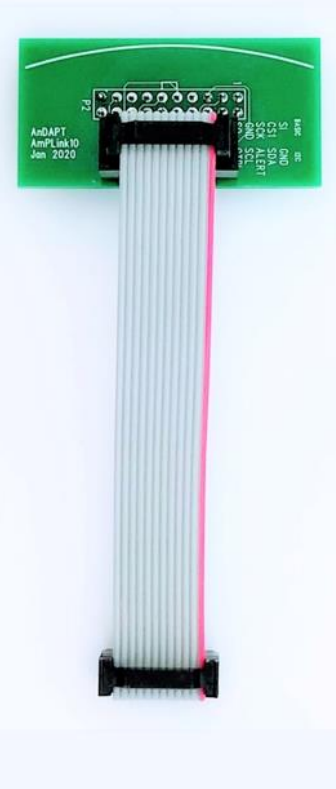|				
AMP_SI	1	2	CS1	
AMP_SCLK	3	4	GND	
AMP_SO	5	6	AMP_Config	

AmPLink Images

AmPLink with AmLink12 Adapter and Basic 6-Pin Cable
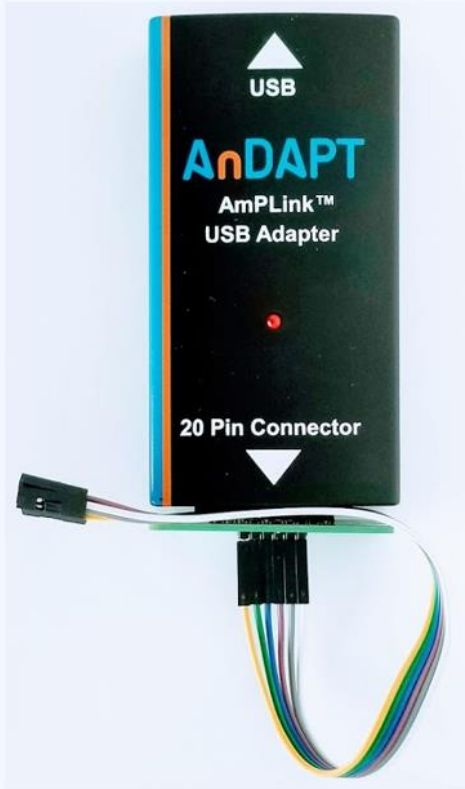
AmLink12 Adapter Basic 6-Pin Cable

AmLink12 Adapter 12-Pin Cable

Electrical Characteristics

Description	Condition	Min	Typ	Max	Unit
VBUS (5V) output maximum current	current limit with foldback current limiting	500		700	mA
3.3V output maximum current	current limit with constant current limiting			500	mA
Inputs and outputs	logic levels		3.3		V
GPIO pin maximum output current				8	mA
Adapter supply current	Assuming negligible current drawn from the IO connector		80	100	mA

Precautions for Use

The AmPLink USB Adapter features ESD protection, however, damage may occur at high ESD levels. Therefore, it is recommended that static handling precautions be followed at all times.

Software

AmPLink software is only intended for use with AnDAPT products. It can be downloaded from https://www.andapt.com/ WebAmP AmPLink download.

Windows Driver Installation

The AmPLink Adapter drivers will normally be installed automatically when an Adapter is plugged into a USB port on a PC. If this does not happen use the driver setup executable available from the FTDI website at http://www.ftdichip.com/Drivers/D2XX.htm. Choose the latest version based on your operating system.

Windows AmPLink Control Installation

The control software is available at https://www.andapt.com/ WebAmP tools download page.

Download the zip file to your PC and unzip the AmPLink.zip folder onto your hard disk. Click on the executable to run the Windows control interface.

Revision History

Date	Revision
2/1/2020	Added AmPLink12 Adapter Extension
9/1/2016	5V output can limit at between 500mA and 700mA;
8/1/2016	Initial

Trademarks