Click image for details

P&E's **USB Multilink Universal** is an all-in-one development interface which allows a PC access to the Background Debug Mode (BDM) or JTAG interface on **Freescale HCS08, HC(S)12(X), S12Z, RS08, ColdFire V1/+V1, ColdFire V2-4*, Qorivva 5xxx, and Kinetis ARM microcontrollers**. It connects between a USB port on a Windows machine and the standard debug connector on the target. The Freescale microcontrollers are supported via the multiple headers located on the USB Multilink Universal. The product photos to the left of this page show how the headers can be accessed by simply flipping open the plastic case. Ribbon cables suitable for a variety of architectures are included.

Supported Freescale Devices:

- Kinetis (includes L-Series)
- Qorivva MPC5xxx
- STMicro SPC5xxx
- ColdFire +V1/ColdFire V1
- ColdFire V2/3/4
- HC(S)12(X)
- S12Z
- HCS08
- RS08
- DSC

NOTE: For a much faster all-in-one development interface which can also supply power to the target, please see the USB Multilink Universal FX.

For production usage, see either the Cyclone PRO or Cyclone MAX stand alone programmer and debug interface, depending on which processor you are working with. See the comparison chart below.

By using the **USB Multilink Universal**, the user can take advantage of the background debug mode to halt normal processor execution and use a PC to control the processor. The user can then directly control the target's execution, read/write registers and memory values, debug code on the processor, and program internal or external FLASH memory devices.

The **USB Multilink Universal** works with P&E Microcomputer System's in-circuit debuggers and flash programmers to allow debug and flash programming of the target processor. For many of the supported processors, P&E has a set of interface libraries allowing the user to write their own Windows based application which interacts with P&E's debug interface. IAR, Cosmic, Codesourcery, Keil, Atollic, and CodeWarrior software all support the use of P&E's USB Multilink Universal to develop and debug with Freescale's Kinetis ARM devices.

This interface is USB 2.0 compatible, and it is also backwards compatible with USB 1.1 ports.

FEATURES:

- USB interface from PC to Multilink allows for fast, easy programming and debugging -- with the ease and compatibility of the USB interface.
- Draws power from USB interface-- no separate power supply required (draws less than 1mA from the target).
- Target Voltage: 1.8V-5.25V
- Target Frequency: 16Khz-50Mhz (applies to HCS08,RS08,CFV1, S12Z, or HCS12X only)
- Compatible with HCS08, RS08, HC(S)12(X), S12Z, ColdFire V1/+V1, ColdFire V2-4, Qorivva MPC5xxx, and Kinetis ARM families of microcontrollers.
- Kinetis support includes both the JTAG and SWD protocols
- Includes USB cable, Type A Male to Type B Male, 6-ft.
- Auto-frequency detection + trimming capabilities for HCS08 devices.
- Auto-frequency detection for HC(S)12(X) devices.
- Generates programming voltage on RESET line for RS08 devices.

Includes:

- One (1) USB 2.0 High Speed Cable, Type A to Type B, 6-ft.
- One (1) 6-pin 0.100" pitch ribbon cable for connecting to RS08, HCS08, HC(S)12(X), S12Z, ColdFire V1/V1+ targets
- One (1) 14-pin 0.100" pitch ribbon cable for connecting to Qorivva MPC5xxx targets
- One (1) 26-pin 0.100" pitch ribbon cable for connecting to asynchronous ColdFire V2/V3/V4 targets
- One (1) 20-pin 0.100" pitch ribbon cable for connecting to Kinetis ARM targets
- One (1) 10-pin 0.050" pitch ribbon cable for connecting to Kinetis ARM targets (Mini-10)
- One (1) 20-pin 0.050" pitch ribbon cable for connecting to Kinetis ARM targets (Mini-20)

*Recommended Accessory

The USB Multilink Universal includes a ribbon cable for connecting to ColdFire V2-4 targets, however the MCF5272 & MCF5206(E) devices will require a separate adapter cable (not included) to synchronize the communications signals (as these devices do not do this on-chip).

Which Hardware Interface Is The Best Fit?

	MULTILINK UNIVERSAL	MULTILINK UNIVERSAL FX	CYCLONE PRO	CYCLONE MAX
Usage	Development	Development	Development & Low- or High-Volume Production	Development & Low- or High-Volume Production
Operating Modes	Tethered to PC	Tethered to PC	Tethered to PC or Stand-Alone Programming Mode	Tethered to PC or Stand-Alone Programming Mode
Supported MCUs	Kinetis	Kinetis	-	Kinetis
	Qorivva MPC5xxx	Qorivva MPC5xxx	-	Qorivva MPC5xxx
	ColdFire	ColdFire	ColdFire +V1/ColdFire V1	-

	+V1/ColdFire V1	+V1/ColdFire V1	-	ColdFire V2/3/4
	ColdFire V2/3/4	ColdFire V2/3/4	HC(S)12(X)	-
	HC(S)12(X)	HC(S)12(X)	S12Z	-
	S12Z	S12Z	HCS08	-
	HCS08	HCS08	RS08	-
	RS08	RS08	-	DSC
	DSC	DSC	-	-
	-	HC16	-	-
	-	683xx	HC08	-
	-	-	-	Power 5xx/8xx
	-	Power 5xx/8xx	-	ARM MAC7xxx
	-	-	-	
Communications	High-Speed USB 2.0	High-Speed USB 2.0	Full-Speed USB 1.1, Ethernet, Serial	Full-Speed USB 1.1, Ethernet, Serial
Speed	Moderate	Very Fast*	Very Fast	Very Fast
Power Management	Does not provide target power	Can provide 3V/5V via ribbon cable	Can provide 3V/5V via ribbon cable, or automatically switch up to 24V via internal relays	Does not provide target power
Automation	Scripted programing with CPROG**	Scripted programing with CPROG**	Includes free Basic Cyclone Automated Control Package	Includes free Basic Cyclone Automated Control Package
Included Software	None	None	• Interactive Cyclone programming software • Basic automation package • Stand-alone configuration utilities	• Interactive Cyclone programming software • Basic automation package • Stand-alone configuration utilities
Price	$199	$399	$598	$899