ULINK*plus* debug adapter

ULINKPLUS

The **ULINK*plus*** debug adapter connects your PC's USB port to your target system (via a 10-pin Cortex Debug connector). It allows you to **program, debug, and analyze** your applications and their power consumption using its outstanding **power measurement** technology.
ULINK*plus*, together with MDK, provides extended on-the-fly debug capabilities for Cortex-M devices. You can control the processor, set breakpoints, and read/write memory contents, all while the processor is running at full speed. High-Speed **data trace** enables you to analyze detailed program behavior.

Introduction

ULINK*plus* is an innovative universal debug/trace adapter that enables test automation, software optimization for ultra-low power applications, and isolation for high-speed debug and SWV trace of sensitive hardware systems. The compact enclosure allows usage in harsh environments and provides standard target connectors for JTAG, power measurement, and general purpose I/O.

ULINK*plus* connects to any Arm Cortex-based device and offers multi-core debugging. It uses a CMSIS-DAPinterface which is widely supported by many debuggers. It provides isolated JTAG/serial-wire pins and isolated power measurement connections to the target hardware. This is essential for debugging applications such as motor control, power converters, or systems with sensitive analog processing.

A unique feature of ULINK*plus* is the power measurement capability. It utilizes two high-precision 16-bit sigma-delta A/D converters with 20 MHz sample rate for high signal/noise ratio.

Power measurement is synchronized to event tracing, which makes it easy to optimize the energy efficiency of a system. ULINK*plus* provides general purpose I/Os accessible from debug views or from debug scripts. This enables you to interact with the target under test or to control automated test stands.

Kit Contents

The **ULINK***plus* kit includes:

- 1 x ULINK*plus* USB-JTAG adapter.
- 1 x USB A/MicroB cable.
- 1 x 10-pin ribbon cable for connecting to target hardware using the Cortex debug connector.
- 14 x jumper wires for power measurement and I/O test connections.
- 6 x power measurement shunts (5 mA, 10 mA, 25 mA, 50 mA, 100 mA and 250 mA).

ULINKplus Adapter Kit

Technical characteristics

The following table is an overview of the technical characteristics. Refer to **Hardware description** for further details on the specific ULINK*plus* interfaces.

Interface	Description
USB	USB 2.0 high-speed Provides power supply for ULINK*plus*
JTAG/SWD	Voltage range: 1.2 V .. 5.5 V Clock speed: configurable up to 10 MHz SWO trace capturing: data rate up to 50 Mbit/s (UART/NRZ Mode) Isolation: 1 kV Supports hot-plugging to a running target

Power	Sample rate: 20 MHz (16-bit delta-sigma technology)
	Input voltage range: +/- 6.0 V
	  - Precision: +/- 2%
	  - Resolution: 0.6mV
	Input current range (with internal shunt resistor): +/- 2.5mA
	  - Precision: +/- 2%
	  - Resolution: 200nA
	  Current range is extended using external shunt resistors
	Isolation: 1 kV

I/O	9 configurable I/O pins support:
	  - Up to 9 digital I/O pins
	  - Up to 4 analog input pins
	  - 1 analog output pin
	Additional +3.3 V supply voltage (10mA) switchable

Requirements

Use ULINK*plus* with [MDK](#) v5.25, or higher.

Supported devices

ULINK*plus* supports Arm Cortex-A, Cortex-M, and heterogeneous devices equipped with a [CoreSight](#) debug unit. Refer to the [device database](#) for a complete list.

Broad device support

ULINK*plus* connects to a wide variety of processor targets:

- [JTAG](#) support for Arm Cortex processors
- [Serial Wire Debug (SWD)](#) support for all Arm Cortex processors
- [Serial Wire Viewer (SWV)](#) support for all Arm Cortex-M processors

High-speed connections

ULINK*plus* offers fast and reliable target connections:

- Data and event trace for Arm Cortex-M up to **50 Mbit/s**.
- JTAG/SW clock speed up to **10 MHz**
- High-speed memory read/write up to **1 MByte/s**

Power measurement

ULINK*plus* provides isolated JTAG/serial-wire and isolated power measurement connections to the target hardware. This is essential for testing applications such as motor control, power converters, or systems with sensitive analog processing. The power measurement is synchronized to event tracing which makes it easy to optimize the energy efficiency of a system. The intuitive graphical user interface allows you to quickly spot and attribute any unintended behavior to the right piece of code.

Specification

- Wide target voltage range: 1.2V - 5.5V
- Electrical isolation from the target system is integrated up to 1 kV
- USB 2.0 high-speed connection using the CMSIS-DAP debug protocol
- USB powered (no power supply required)
- 10-pin (0.05") - [Cortex debug connector](#)
- Hot-plugging to running targets