The ULINKplus 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. ULINKplus, 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

ULINKplus 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.

ULINKplus connects to any Arm Cortex-based device and offers multi-core debugging. It uses a CMSIS-DAP interface 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 ULINKplus 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. ULINKplus 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 ULINKplus kit includes:

- 1 x ULINKplus 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 ULINKplus interfaces.

<table>
<thead>
<tr>
<th>Interface</th>
<th>Description</th>
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<tbody>
<tr>
<td>USB</td>
<td>USB 2.0 high-speed&lt;br&gt;Provides power supply for ULINKplus</td>
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<tr>
<td>JTAG/SWD</td>
<td>Voltage range: 1.2 V .. 5.5 V&lt;br&gt;Clock speed: configurable up to 10 MHz&lt;br&gt;SWO trace capturing: data rate up to 50 Mbit/s (UART/NRZ Mode)&lt;br&gt;Isolation: 1 kV&lt;br&gt;Supports hot-plugging to a running target</td>
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| Power     | Sample rate: 20 MHz (16-bit delta-sigma technology)<br>Input voltage range: +/- 6.0 V<br>  - Precision: +/- 2%
  - Resolution: 0.6mV<br>Input current range (with internal shunt resistor): +/- 2.5mA<br>  - Precision: +/- 2%
  - Resolution: 200nA<br>Current range is extended using external shunt resistors<br>Isolation: 1 kV |
| I/O       | 9 configurable I/O pins support:<br>- Up to 9 digital I/O pins<br>- Up to 4 analog input pins<br>- 1 analog output pin<br>Additional +3.3 V supply voltage (10mA) switchable |
Requirements
Use ULINKplus with MDK v5.25, or higher.

Supported devices
ULINKplus 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
ULINKplus 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
ULINKplus 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
ULINKplus 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