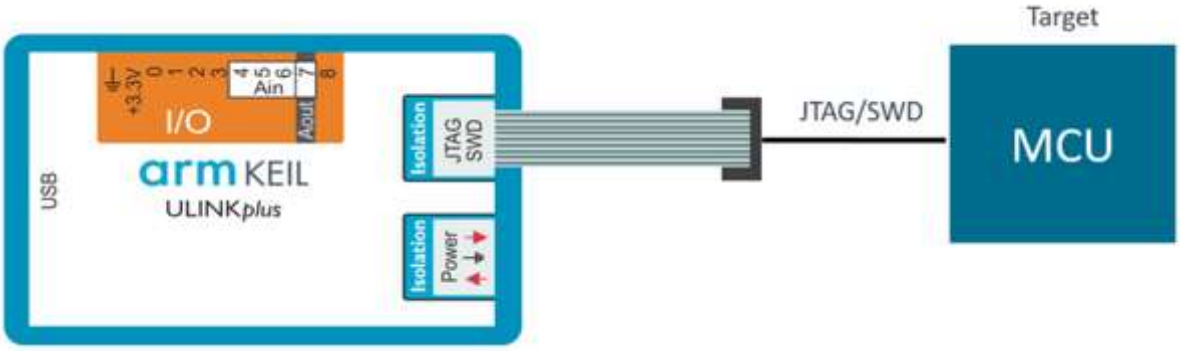
Debug and Trace

ULINK*plus* adapter has a 10-pin JTAG/SWD connector that enables programming, debugging, and tracing programs on the target hardware. This connector is 1kV isolated and is well-suited for use with motor control and power converter applications, as well as systems with sensitive analog processing.



ULINK*plus* quick start guide provides a video overview of ULINK*plus* debug and trace capabilities.

This Chapter contains following information:

- **JTAG/SWD Interface** provides schematics, signal description and technical data about the interface.
- **ULINK SWD Adapter** explains how to use the adapter board to the 6-pin SWD port on STM32 development boards.
- **Connect to Target** shows how to connect a ULINK*plus* to your PC and target hardware.
- **Debug** explains debug configuration settings and gives an introduction on how to debug your application.
- **Configure Flash Download** describes the steps to program on-chip and external Flash memory on the target hardware.
- **Clock Measurement** shows how to measure CPU clock frequency with ULINK*plus*.
- **Trace** explains the trace functionalities available with ULINKplus.

The table below summarizes the features available directly over JTAG/SWD and over SWD+SWV (trace enabled) connections.

Interface	Feature	Description
JTAG/SWD	Flash download	Transfer the application into the target's non-volatile memory.
	Application debug	Run the program on the target device.
	Clock measurement	Verify the clock frequency settings.
	Component Viewer	Displays information on software components and other objects.
	Event Recorder	Observe events and timing information of software components.

SWD+SWV	System Analyzer	Graphical analysis tool for clock, power, exceptions, and variable changes.
	Logic Analyzer	Graphical analysis tool that shows value changes of variables or VTREGs.
	Event counters	Watch cumulative numbers of various events.
	Exceptions and interrupts	Display statistical data about the traced exceptions and interrupts.
	Data trace	Show the history of executed instructions.
	ITM trace	Enable printf style debugging using the ITM stimulus port 0.