# **Embedded Systems Essentials with Arm: Get Practical with Hardware**

## Module 2

## KV2: Introducing the USB (Universal Serial Bus)

This video gives a brief overview of the widely used and very common USB (Universal Serial Bus). You may recognize this from your mobile device or your memory stick. Many of its applications lie outside the world of embedded systems but, as embedded designers, we need to know about it because it has its place in what we do. We can use it for data transfer and other applications specific to our work.

The electrical interconnection of a USB is quite simple. It has two data wires labeled D+ and D-. Cleverly, it can supply power at 5 volts and generally up to 100 milliampere.

The price we pay for this simple electrical interface is the complex software behind it.

Like all protocols, USB has gone through many enhancements. However, USB 2.0 is still widely used.

A spinoff of USB is known as USB on-the-go (USB OTG) and allows devices to act both as host and function. Your mobile phone can often act as host or function dependent on what role it’s playing. It can read from removable media as a host device and also present itself as a USB mass storage device when connected to a host computer. So the concept should be familiar to you.

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