

Embedded USB Device Stack

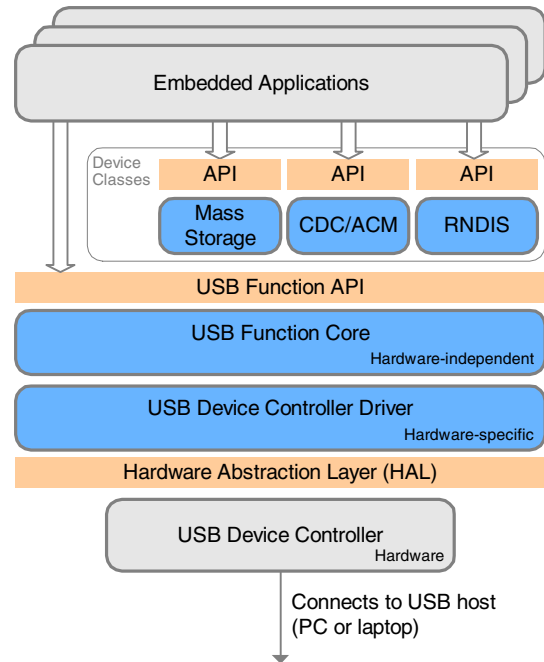
Industrial-grade, standard-compliant USB device software solution

Thesycon's Embedded USB Device Stack implements the core functionality of a USB device and optionally provides device class specific protocols. It enables developers to easily add USB device functionality to embedded systems.

The software stack complies with the USB v1.1 and USB v2.0 specifications. It supports all transfer modes (control, bulk, interrupt, isochronous) at low, full and high speed. Complete USB request processing and extended error recovery mechanisms that are required for reliable operation are implemented internally.

The modular design allows to implement proprietary USB interfaces and standard device classes. The creation of composite devices which implement multiple logical functions on one physical controller as well as multi-configuration devices are fully supported.

Device class specific APIs provide a high abstraction level and are easy to use. No USB know-how is required. To use the USB Function API directly, basic USB knowledge is needed.



Device Classes

The CDC/ACM protocol module implements a standard-compliant serial link (RS-232) emulation on top of USB. This provides an easy migration path for existing applications. Thesycon also offers an appropriate device driver for Windows operating systems. The driver emulates serial (COM) ports and thus allows to re-use existing Windows applications unmodified.

The RNDIS module implements an Ethernet emulation on top of USB. This approach is especially useful if an embedded system contains a TCP/IP protocol implementation. A suitable RNDIS device driver is included in Windows and some other operating systems.

Further device classes can be created by Thesycon on request or implemented by a customer.

Platform Integration

The Embedded USB Device Stack is written in ANSI C and can be ported to any hardware platform. For easy integration the software is designed as a library and provided as source code. The library does not depend on any specific operating system support. It can be integrated into any embedded OS, or can be used in stand-alone applications. Hardware access is encapsulated by a Hardware Abstraction Layer (HAL) which needs to be implemented in a platform-specific way. The stack supports 32-bit and 16-bit CPUs and works in either endian mode.

Licensing

Single product and product family licenses are available. A device stack license includes the full source code and allows royalty-free distribution of binaries compiled from the sources. Distribution of source code is not permitted. For complete license conditions and prices please contact Thesycon.

Supported Controllers

- Renesas H8SX/1663 Group (full speed USB MCU)
- Renesas H8SX/1653 Group (full speed USB MCU)
- Renesas H8SX/1668R Group (full speed USB MCU)
- Renesas H8S/2472 Group (full speed USB MCU)
- Renesas H8S/2215 Group (full speed USB MCU)
- Renesas M16C/6C (full speed USB MCU)



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