# HART® 7 Slave Library

Overview

The HART Slave Library is a quick and easy solution to add HART 7 capabilities to your field device and it gives access to all features and services defined in the HART Field Communications Protocol Specification.

HART devices exchange digital data on the 4-20 mA control loop. An FSK modem modulates the digital data on the current signal to simultaneously allow digital communication and analogue control. The digital inter-face is used for flexible parameterization of the field device. It is also used to monitor operation parameters or to entirely control a device digitally. In multi-drop mode several devices can be networked together on the same control loop. HART is well established and long-time proven in various industries. The HART protocol is capa-ble of bidirectional communication even in explosive environments.
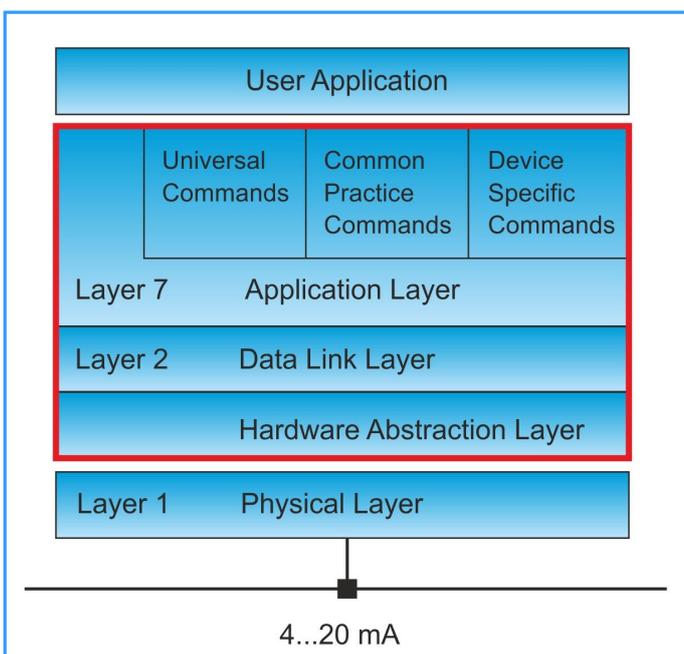
Advantages

HART offers several advantages:

- Field-proven, open standard
- Easy installation, operation and maintenance
- Compatible to existing analogue installations
- Simultaneous analogue and digital communication
- 2 and 4 wire technology
- Multi-drop and multi master operation
- Both actuators and transmitters are supported

Block Diagram

Technology

The Slave Library is a software module written in ANSI-C that can be integrated in almost any embedded system. Full source code is provided and compiled with your own code. The library provides a simple API for interfacing with your application. Resource consumption is minimal. A Hardware Abstraction Layer allows integrat-ing platform specific peripherals (ADC, DAC, UART). Project specific customization is easy and the developer can extend the universal and common practice commands with his own de-vice specific commands.

Order Information

No. 21003

No. 21004 incl. HART Softmodem

Technical Data

HART Features

- HCF compliant (various devices realized)
- HART Version 7
- Backwards compatible to HART 5 and HART 6 masters
- Universal commands
- Common practice commands (partly optional)
- Burst mode (primary & secondary master)
- Multiple burst messages
- Dynamic variable mapping
- Command aggregation
- Expanded manufacturer codes
- Time stamped data
- Multi-drop mode
- Trim support for loop current and device variables
- Support of real-time clock (RTC) or emulates RTC
- Lock device and write protect device
- Communication statistics
- Supports transmitters (actuators optional)
- Multiple analogue channels (optional)
- Block transfer (optional)
- Event notification (optional)
- Synchronous action (optional)
- Delayed response (optional)
- Trend support (optional)

Easy Integration

- Tiny & efficient: Runs on almost any controller (8/16/32 bit)
- Supports various integration scenarios, with or without operating system (RTOS): Main loop or timer interrupt driven or RTOS task handler
- Supports external HART modem or optional softmodem (HART modem realized by software)
- Easy device specific parametration
- Hardware abstraction layer for platform customization
- API for device specific HART commands (user extensible)
- API for command 48 data (device specific)
- API for non-volatile data

System Requirements

- 2 kByte RAM and 20 kByte FLASH (3/50 kByte including all options)
- ADC and/or DAC for every analog channel
- UART/external modem, if softmodem is not used
- Time counter
- No interrupts required

Delivery Content

Documented source code
Developer guide
Examples