ST16-19HDSE

Development Environment
For ST16 and ST19 Smartcard MCU Families

DATA BRIEFING

HARDWARE FEATURES

- Supports all ST19 and ST16 family members including contactless products
- Emulation of cryptographic functions protected by key
- Real time CPU emulation
- Supports custom cells
- Two high-speed built-in card readers
- Fast PC communication link (100 K Bytes/ second) on a single PC parallel port

SOFTWARE FEATURES

- Full Windows software Windows 95, Windows 98 or NT
- Source level debugger

- Assembly language
- C language supported by third parties
- ST16 to ST19 assembly language translator
- Reader software utilities
- High level language test player
- PC/SC reader interface

NUMEROUS DEBUG TOOLS

- Unlimited number of breakpoints (hardware and software)
- Out of specification software bugs detector
- Built-in logic analyser up to 256 Kcycles trace
- External trigger input
- Two external trigger outputs

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GENERAL DESCRIPTION

The ST16-19HDSE development environment is composed of the ST16/19-HDSE and a software package.

HARDWARE PACKAGE

The ST16/19-HDSE is a complete hardware development system including: an emulator for MCU based smartcard ICs, powerful debugging functions and two high speed card readers, all in a single box.

The Figure 1 represents the ST16/19-HDSE and its environment.

The parallel port driver provided allows to separately activate the different parts of the ST16/19-HDSE to be activated separately by a PC compatible host computer through a single parallel port. Many drivers have been written to be able to use custom reader software or automatic test tools.

SOFTWARE PACKAGE

The software package delivered with the ST16/19-HDSE is composed of:

■ ST16 or ST19 macro assemblers

■ Linker

■ Library

■ Source level debugger (C or assembler)

■ Product configuration maker

■ Environment configuration maker

■ High level language test environment

■ Simulator

■ Cryptographic library evaluation

■ Cryptographic calculator

All software is Windows compatible.

The third-party compiler allows development in C language. Source level debugging is supported either by STMicroelectronics or by third-party debuggers.

This combination of enhanced hardware and flexible software allows any ROM code to be developed and tested easily in an adapted environment. Numerous and various situations can be achieved as: personalization in issuer mode under control of a master card, communications between an electronic purse and a banking card, authentication of a synchronous telephone card by a security module, etc.

Direct interface to the system can be performed through DLLs, thus ST16/19-HDSE can be integrated in a custom test environment. Furthermore, a complete test environment, which can be programmed in C or other high level languages, is also provided.

Figure 1 ST16/19-HDSE System Configuration
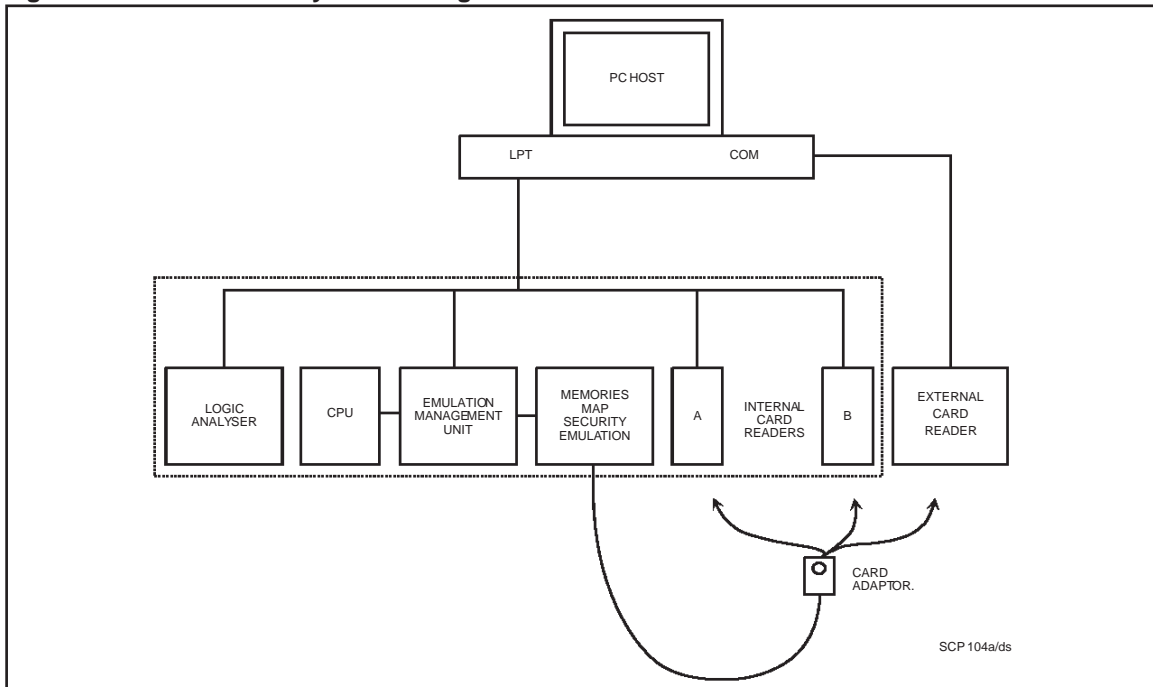
DEBUGGING TOOLS

Hardware and software breakpoints allow the user to stop the CPU whenever the application ROM code execution reaches selected addresses, addresses within a selected range, or on data fetch cycles. The user is then able to read and modify any register or memory location within the simulated memory or place other breakpoints or triggers.

Using the powerful triggering conditions of the logic analyser, it is possible to record only cycles which are of interest to the user. Events can be defined as logic combinations of 36 bit wide patterns occurring up to 64,000 times.

The acquisition mode can be defined by a sequence of a combination of triggers.

Such a powerful tool enables the user to detect and trap any pattern and thus quickly debug the application.

CARD READER

A card reader can be connected to the host computer through a serial link. The ST16/19-HDSE also includes two high speed card readers. This enables the development loop to be closed, and complete applications to be emulated on a single host computer.

FRONT PANEL

The ST16/19-HDSE front panel displays the status of the chip external ISO 7816-3 compatible signals (VCC, RST, CLK, I/O). It also indicates the state of built_in readers A and B.

ORDERING INFORMATION

Sales type	Description
ST16-19HDSE	ST16 & ST19 hardware development system and associated software
STLIB4HDS	Cryptographic DLLs for ST16CF54B, ST19CF68 and ST19KF16

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