The second member of the Teridian Semiconductor 73S11xx family of smart card terminal controllers, the 73S1113F, is a stripped down version of the full-featured 73S1121F. It shares the same digital platform (80C52 core, with 64kB of Flash program memory and 4kB of user XRAM data memory, ISO7816 UART). It features a single built-in ISO7816 / EMV smart card interface and a USB full-speed interface. Additionally, it has a man-machine interface with a 5x5 PIN-pad interface and 7 dedicated LCD I/Os.

The 73S1113F is especially suitable for PC-connected applications for payment or identification. Its embedded hardware ISO7816 UART is dedicated to communicating with asynchronous cards under T=0, T=1 protocols. This UART can be bypassed to allow any other firmware-enabled protocol, for synchronous cards. The large amount of builtin memory allows developers to implement various protocols without having to worry about code size.

Embedded applications can be developed using the same 73S11xx Development Kit and development tools. The Teridian Semiconductor Application Programming Interface (API) is fully compatible with the 73S1113F. Ready-to-use EMV test application and API commands can be immediately incorporated into custom projects, to allow immediate EMV certification in accredited labs. Like the other members of the 73S11xxF family, the embedded flash memory can be downloaded through the serial interface, either initiated from the external word by hardware (In-System-Programming mode, or ISP, controlled by a dedicated input), or from the embedded application (In-Application-Programming, or IAP). IAP can therefore support update of the flash memory through the USB. ISP mode can be used at production level to download the first application, and can be permanently disabled by blowing a built-in fuse. This will guarantee the integrity of the embedded application, and only the embedded application itself will then be able to update the content of the flash memory.

The API can be used to control the features of the entire chip, including USB and serial interfaces, display, PIN management in accordance to CCID 1.0, user I/Os and CPU resources (clock management, interrupts and power modes). 73S1113F feature set makes it the ideal IC solution for CCID compliant smart card terminals (USB Device Class Specification for USB Chip/Smart Card Interface Devices).
Features

Microcontroller
- 80C52 Core
- 64KB internal Flash (Program Memory)
- 1KB IRAM + 4KB internal XRAM (user data memory)
- ROM Boot-loader enabling In-System-Programming (ISP) and In-Application-Programming (IAP) of the internal Flash
- 128 Bytes Flash IFB (Information Block for serial #, firmware version...)
- Single low cost 12MHz crystal

Smart Card Interfaces
- (1) ISO-7816 / EMV 4.0 smart card interfaces w/ embedded Step-up converter for 3V/5V smart-cards
- ISO-7816 UART (9600Kbps to 115Kbps with 12MHz crystal) for protocols T=0, T=1 with a dedicated 2-Byte FIFOs
- Auxiliary I/O lines for C4/C8 signals and UART bypass for synchronous card support
- Card clock stop high and low
- Card clock up to 7.2MHz
- Shared 2-wire interface enabling connection of additional smart card interfaces

Peripherals
- 5x5 Keyboard Interface: with hardware scanning, de-bouncing and scrambling
- (7) Dedicated I/Os (to control any external LCD driver)
- 8 User I/Os
- 1 Analog Input: programmable voltage detection from 1V to 2.5

Communication
- USB Full-speed interface (12Mbps with 4 Endpoints)
- (1) Serial interface 1200Kbps to 115Kbps

Security
- Embedded security fuses to permanently disable the In-System-Programming mode.

Software
- Two-level API (C-language libraries) for fast application development
- CCID Reference design, compatible with Microsoft CCID driver, and with Teridian CCID driver, that supports PINpad, LCD and multi card slots

Power Supply: Single 2.7V to 3.6V
Package: 64 LQFP