Point of Sale (POS) Reader Solution

The SLN-POS-RDR point of sale (POS) reader solution enables you to quickly add a PCI®- and EMVCo®-compliant PIN entry device (PED), NFC reader, chip card reader and magnetic stripe reader (MSR) to any design to enable credit card payment.

OVERVIEW

Many companies are creating products today that would benefit from adding payment capabilities to the design. However, getting the necessary PCI and EMVCo certifications are a significant engineering and development barrier. This solution is pre-certified for EMVCo and PCI PTS PIN entry device (PED) standards to give companies confidence that they will have a high likelihood of passing certification the first time without the added expense of failing and resubmitting. In addition, all documentation, design files and software are provided to deduct many man-months off your design time for faster time-to-market.

The POS reader solution (Figure 1) is based on the PIN pad POS solution and several other Tower development boards. The level 1 and level 2 contact and contactless EMVCo pre-certified software is running on the PIN Pad POS solution board (Figure 2) based on the TWR-POS-K81 and featuring the secure Kinetis K81 MCU and the Cirque® SecureSense™ analog front end (AFE).

The K81 MCU has been evaluated for compliance for PCI PTS 4.1. The Cirque Secure Sense technology obscures PIN entry from the capacitive sensor grid to the Cirque AFE without complex physical protection of routed signals. The PIN Pad POS solution has been designed to be a PIN entry device (PED) in the PCI certification process and is currently PCI PTS 4.1 certified. The second major component of this reader solution is the TWR-POS-PN5180 development board (Figure 3). This board contains the high-power PN5180 contactless 13.56 MHz NFC reader as well as the TDA8035 contact reader. The POS reader solution also has two options for displays. There is a lower-cost two-line character segment LCD for the most basic requirements for PIN entry. In addition, there is a higher resolution 3.2" QVGA TFT color display for more advanced graphic user interface capability.

From a software perspective (Diagram 1), the POS reader solution is divided into two basic functionalities: the EMVCo-required level 1 and level 2 contact and contactless communication stacks. The level 1 contact software component is owned by NXP and delivered at no charge. It is tightly coupled with the EMVSIM ISO-7816 hardware interface on the K81 which handles communication with the NXP TDA8035 contact card physical layer. The level 1 contactless software component is also owned by NXP and delivered at no charge. This component is used to communicate with the NXP PN5180 contactless physical layer. Both of the NXP contact and contactless software components come with a pre-EMVCo certification report from FIME. The EMV level 2 contact and contactless software components are owned by Cardtek®, a major supplier of EMVCo-compliant software components. The EMV L2 stack can be licensed directly from Cardtek. The other major software functionalities are the PIN entry and key management components from Cirque. These components are licensed for free with the purchase of the Cirque SecureSense AFE.

HARDWARE DESIGN FILES

K80 K81 K82 BSDL files
K80 K81 K82 IBIS
TWR-POS-K81 Hardware design package
PN5180 Hardware design package

CERTIFICATION REPORTS

NXP K81 Side-Channel Reports
EMV L1 Contact and Contactless pre-certification testing reports
EMV L2 Contact and Contactless pre-certification testing reports
NXP K81 Chip Level Pre-Certification report
TWR-POS-K81 Pin Pad PCI PTS 4.1 Certification Report

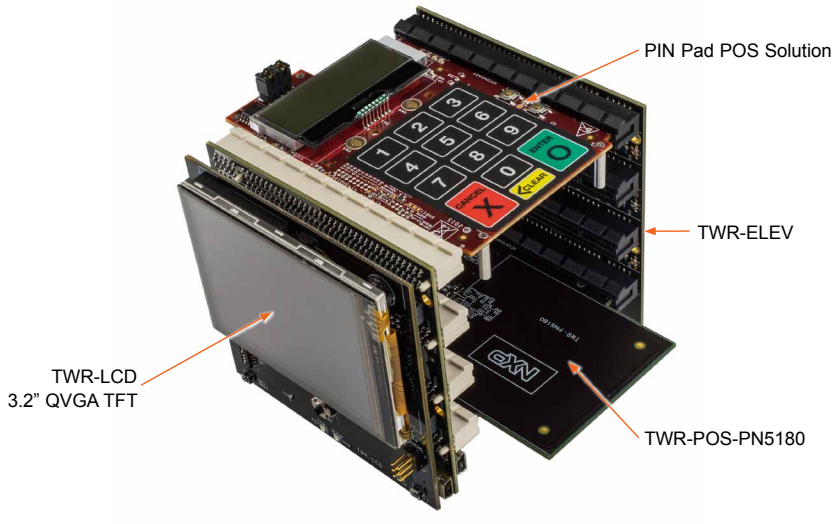
SOFTWARE AND TOOLS

KINETIS-SDK: Software Development Kit for Kinetis® MCUs - K81 SDK 2.3 with DryICE (NDA Controlled)
Kinetis Design Studio integrated development environment (IDE)
mbed TLS 2.6.0
NXP Kinetis Bootloader 2.0 with secure boot configuration
EMV L1 Contact Interface Stack
Graphical User Interface middleware
Serial NOR Flash Files system
Issuer Host Simulator (IHS) tool
Point of Sale modules for USB Communicaitons, System initialization, QuadSPI XIP, File system, MPU, PIN entry and User Interface
Cardtek EMV L2 Stack and payment demo application
Cirque secure touch controler software
Applications for Payment, EMV Loopback and PN5180 firmware update.

DOCUMENTATION

L2 Kernel Card Profiles and Demo Scenarios
Point of Sale (POS) Reader Solution API Reference Manual
Point of Sale (POS) Reader Solution Release Notes
Point of Sale (POS) Reader Solution User's Guide
Point of Sale (POS) Reader Solution Quick Start Guide
Secure Boot Lab Guide
Kinetis MCU K81 Data Sheet
Kinetis MCU K81 Reference Manual
PN5180 Data Sheet
PN5180 Reference Manual
TDA8035 Data Sheet
TDA8035 Reference Manual

FIGURE 1: POINT OF SALE (POS) READER SOLUTION



POS READER SOLUTION FEATURES

- Chip-and-PIN keypad based on Cirque SecureSense technology
- EMVCo Level 1 CT/CL stacks by NXP
- EMVCo Level 2 CT/CL stacks by Cardtek
- EMVCo and PCI PTS V4.1 certification
  - EMVCo pre-certification on Level 1 CT/CL by FIME
  - PCI PTS V4.1 pre-certification on the K81 performed by UL Transaction Security
  - PCI 4.1 PIN entry device (PED) certification by UL Transaction Security
- Kinetis K81 Secure MCU
  - Advanced physical tamper security
  - Advanced public-key hardware with support for RSA and ECC
  - XIP from external quad serial NOR flash with decrypt on the fly
- PN5180 contactless 13.56 MHz NFC front end IC
  - Dynamic power control for small antennae design
  - Full compliance with all NFC and EMVCo standards
- TDA8035 contact front end IC
  - 5 V, 3 V, 1.8 V smart card supply
  - Very low power consumption in deep shutdown mode
- Multiple display options
  - Two-line character segment
  - 3.2" QVGA TFT

FIGURE 2: PIN PAD POINT OF SALE (POS) SOLUTION

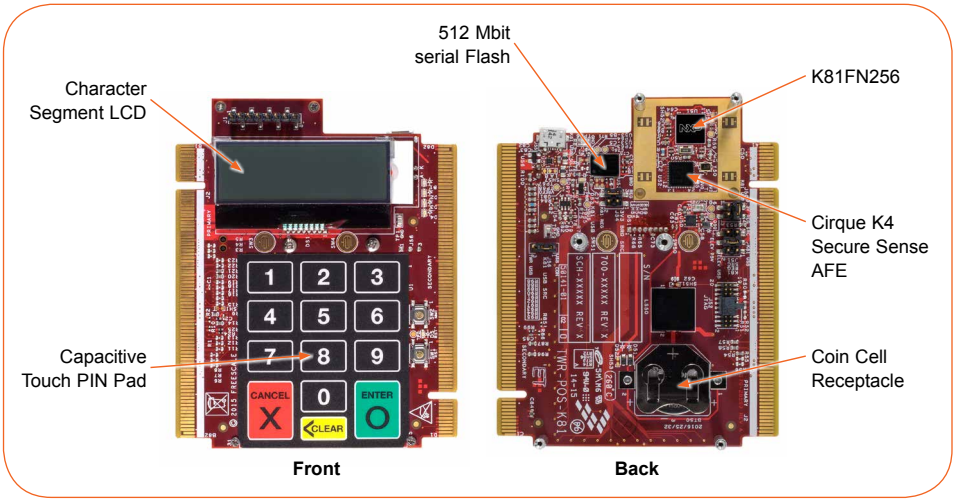


FIGURE 3: TWR-POS-PN5180

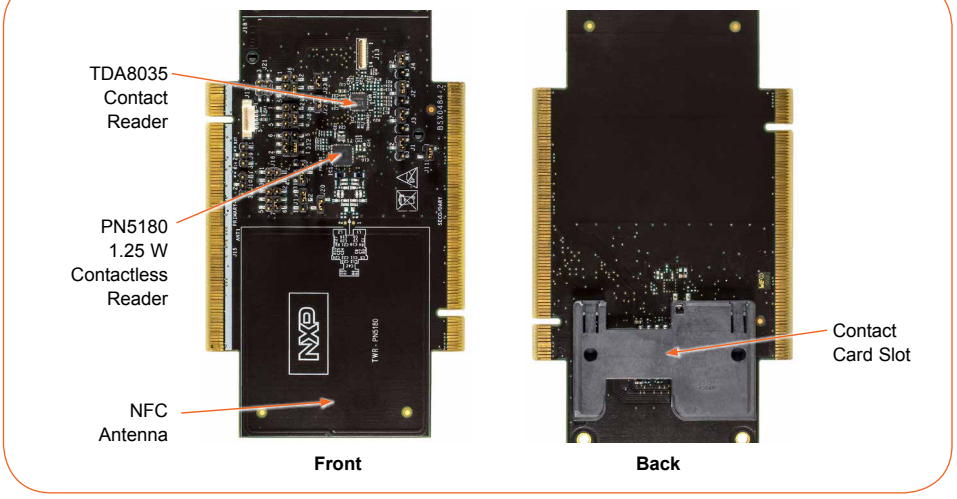
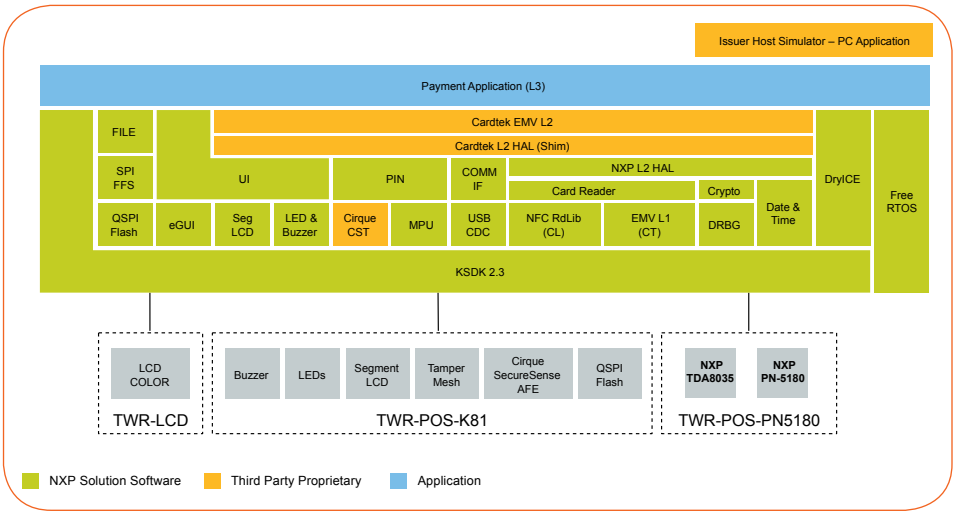


DIAGRAM:1 POINT OF SALE (POS) READER SOLUTION SOFTWARE BLOCK DIAGRAM



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