



**Advanced Card Systems Ltd.**  
Card & Reader Technologies

# eH880 Secure Smart Card Terminal



## Technical Specifications



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## 1.0. Introduction



The new eH880 is a secured and feature-rich secure smart card terminal that leverages the characteristics and mechanisms of smart card technology. This innovative device is capable of facilitating secured mutual authentication, detailed multi-layered information from the cards based from the embedded access rights, and transactions through both private and public network infrastructures. It can offer solution to different applications such as: Healthcare, e-Government, and e-Administration.

The industry defining eH880 specifications include a dual smart card interface, contactless card reader module, USB and RS232 connectivity, integrated TCP/IP networking support, multiple SAM slots, a 128x64 high resolution 2.3 inch

black and white graphical LCD, a durable user-friendly 20-button keypad, multiple bi-colored status LEDs, a highly effective audible speaker, and a real-time onboard clock.

It supports Secure PIN Entry (SPE) so that every PIN code is entered securely on the PIN pad of the device. This successfully eliminates the possibility of a Virus/Trojan or USB Sniffer getting hold of the PIN, since PIN codes are never exposed to the vulnerable PC or workstation.

This highly efficient tool can also host additional features like high-speed WiFi access and optional biometric fingerprint sensor, both at the same time. More importantly, the eH880 firmware can be easily updated through different options; thus, providing the eH880 terminal an unmatched usability and compatibility within any future systems.



## 2.0. Features

- 32-Bit ARM 9 Processor running Embedded Linux
- 32 MB Flash and 32 MB SDRAM Memory
- Support ISO- 7816 Microprocessor Smart Cards with the following features:
  - Class A, B, and C (5 V, 3 V, 1.8 V) cards
  - T=0 and T=1 Protocol
- Supports ISO- 14443 Contactless Smart Cards
  - Type A and B Standard
  - Parts 1 to 4 and T=CL Protocol
  - Mifare Classic
- Certification / Compliance
  - ISO 7816
  - ISO 14443
  - PC/SC
  - USB Full-Speed
  - CE
  - FCC
  - EMV 2000 v4.0 Level 1
  - RoHS
- Dual Operation Modes (PC-Linked/Standalone)
- Dual Interface Reader (Contact and Contactless)
- USB Host & Client Full-Speed/Serial/Ethernet Interface
- 2 Full-Size Contact Card Slots (Landing Connector)
- 2 SAM-Size Card Slots (Contact Connector)
- Firmware Upgradeable
- Easy-to-Read, High Resolution Backlit LCD
- Highly Durable Chemical Resistant 20-Button Keypad
- 4 LED Status Indicators
- Built-in Speaker
- Tamper Detection Switch to Protect Against Unauthorized Intrusion
- Real-Time Clock (RTC) with Independent Backup Battery
- Supports Secure PIN Entry (SPE)
- Supports PPS (Protocol And Parameters Selection) with 9,600—230,400 bps In Reading and Writing Smart Cards
- (Optional) Built-in Fingerprint Sensor
- (On Request) WiFi
- (On Request) Color LCD
- (On Request) Internal Microphone



## **3.0. Supported Card Types**

### **3.1. MCU Cards**

The eH880 operates with MCU cards that follow:

- T=0 or T=1 protocol
- ISO 7816 Compliant Class A, B, C (5 V, 3 V, 1.8 V)

### **3.2. Memory-based Smart Cards (Synchronous Interface)**

The eH880 supports the following memory cards:

- Cards following the I2C bus protocol (free memory cards) such as:  
Atmel: AT24C01 / 02 / 04 / 08 / 16
- SLE4432/5542 intelligent 256 bytes EEPROM with write protect function:  
SLE4432, SLE5542
- SLE4418/5528 intelligent 1K bytes EEPROM with write-protect function:  
SLE4418, SLE5528

### **3.3. Contactless Cards**

The eH880 supports the following memory cards:

ISO 14443 Compliant, Type A & B Standard, parts 1 to 4, T=CL protocol

Mifare<sup>®</sup> Classics



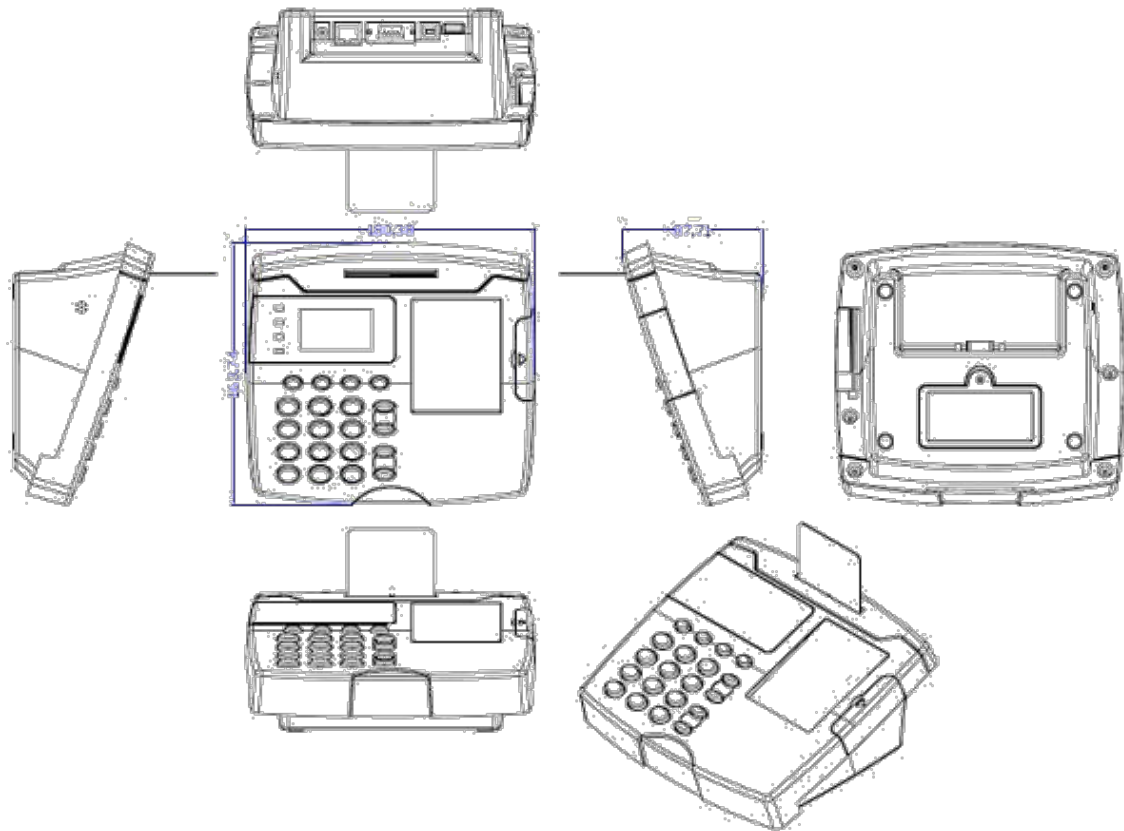
## 4.0. Typical Applications

- e-Healthcare:
  - Medical Identification
  - Digital Signatures
  - Digital Prescriptions
  - Patient Data and History
  - Billing Transactions
- e- Government
- e-Banking and e-Payment
- Transportation
- Loyalty Program
- Time and Attendance Checking





## 5.0. Technical Specifications



### Processor

32-bit Arm 9 processor

### Operating System

Embedded Linux 2.6

### Memory

Memory ..... 32 MB flash + 32 MB SDRAM

### Power

Supply Voltage.....12 V DC

Supply Current.....max. 1 A

Backup battery..... Independent backup battery (1 x CR2032) for internal Real Time Clock and 240-byte Tamper protected storage

### Connectivity

USB ..... USB 1.1 Full-Speed, 12 Mbps

RS232 ..... 3 lines Rx/D, Tx/D and GND

Ethernet..... 10/100 Mb Auto-negotiate

WiFi (on request)

### Smart Card Interface

#### Contact – standard

Smart card slots..... 2 ID-1 slots

Card Connector type..... Landing

Standard..... ISO-7816 Class A, B, C (5 V, 3 V, 1.8 V), T=0 and T=1,

Supply current ..... max. 50 mA

Smart card read / write speed ..... 1,743-250,000 bps

Card insertion cycles ..... 200,000 (minimum)

Short circuit protection ..... +5 V / GND on all pins



**Contact - SAM**

SAM card slots ..... Two ID-000 slots  
Card connector type ..... Contact  
Smart card read / write speed ..... 1,743-250,000 bps

**Contactless**

Standard ..... ISO-14443 A & B part 1-4  
Protocol ..... Mifare® Classics protocols, T=CL  
Smart card read / write speed ..... 106, 212, 424, 848 kbps  
Operating distance ..... up to 60 mm at 106 kbps  
Operating Frequency ..... 13.56 MHz

**Fingerprint Scanner Interface (Optional)**

Active sensor size ..... 12.8 x 18 mm  
Array size ..... 256 x 360 pixels  
Array pitch ..... 50 microns  
Image resolution ..... 508 DPI

**Firmware Upgrade Interface**

Firmware Upgradeable

**Human Interfaces**

Keypad ..... 20 keys (4 Function keys, 4x4 Keypad)  
LCD Display ..... 128 x 64 dot matrix black and white graphic LCD with backlighting  
..... Window size: 49 mm x 29 mm; Active area size: 46 mm x 28 mm  
..... Number of characters on LCD: user definable (Max: 21 characters x 8 rows)  
Audio Speaker ..... 20 – 20 kHz audio  
LED Status indicators ..... 4 LEDs for indicating status (LED1 &2: Red/Green; LED 3: Red; LED4: Green)  
Tamper switch ..... internal anti-intrusion detection and protection

**Physical Specifications**

Dimensions ..... Device: 164.00 mm (L) x 180.00 mm (W) x 88.00 mm (H)  
Case Color ..... White and Metallic Blue  
Weight ..... Device: 766 g

**Operating Conditions**

Temperature ..... 0 °C to 50 °C  
Humidity ..... 40% to 80%, non-condensing

**Certifications/Compliances**

EMV2000 v4.0 Level 1, CE, FCC, RoHS Compliant, ISO-7816, ISO-14443, PC/SC



**Other Features**

Real-Time Clock

**API**

PC/SC, CT-API, OCF, ACS API for peripheral monitoring and control