Advanced Card Systems Ltd.
Card & Reader Technologies

ACR330 Validator
with QR code Scanner

Technical Specifications V1.01

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1.0. Introduction

The ACR330 Bus Validator is a reliable and efficient solution for Automatic Fare Collection (AFC) systems that require cashless payment options in various transportation modes such as buses, ferries, trams and railways.

Using high-speed 13.56 MHz contactless (RFID) technology, the ACR330 supports ISO 14443 Type A and B cards, MIFARE®, and FeliCa. It also features an embedded barcode scanner for transactions using print or mobile barcodes.

The ACR330 offers advanced wireless connectivity options for data transfer such as GSM/GPRS, 3G/4G, and Wi-Fi. It also has an optional GPS feature for fleet management and distance-based fares. The device is built to withstand harsh environment and has an IP54 rating for dust and water protection, as well as Military Standard MIL-STD-810 for Shock and Vibration.

2.0. Features

- 32-bit Processor running Linux® 4.4

- 900 MB Flash and 512 MB RAM

- UPS via SuperCap (5 second interval after primary power source is lost)

- Military Standard MIL-STD-810 for Shock and Vibration

- IP54 Rating for Dust and Water Protection

- Expandable Micro SD Card support with memory from 1 GB up to 32 GB

- Connectivity Options:
  - USB Host
  - Serial Port
  - Ethernet Port
  - Wi-Fi
  - GPRS/GSM, 3G, and 4G[1]
  - Ethernet
  - Bluetooth® 4.0 Dual Mode
  - GPS[2]

- Smart Card Interface:
  - Contactless Interface:
    - Read/Write speed of up to 424 Kbps
    - Built-in antenna for contactless tag access, with card reading distance of up to 50 mm (depending on tag type)
    - Supports ISO 14443 Part 4 Type A and B cards, MIFARE Classic®, and FeliCa
    - Built-in anti-collision feature (only one tag is accessed at any time)
  - SAM Interface:
    - Four SAM-sized Card Slots
    - Supports ISO 7816 Class A, B, and C (5 V, 3 V and 1.8 V) cards
  - SIM Interface:
    - One SIM-sized Card Slot for GPRS/3G/4G connectivity

- Built-in-Peripherals
  - 4.3-inch Easy-to-Read, TFT Colored LCD
  - Capacitive Type Touch Panel
  - Barcode Scanner (Linear/2D)[3]
  - Real-time Clock (RTC) with independent backup battery
  - 6 LED Status Indicators (Front: Blue, Orange, Green, and Red; Back: Green and Red)
  - User-controllable buzzer

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[1] *Please see Appendix A for a more detailed frequency band support; Can be optional*

[2] *Can be optional*

[3] *Can be optional*

- Compliant with the following standards:
  - ISO 14443
  - CE
  - FCC
  - REACH
  - RoHS

3.0. Typical Applications

- e-Banking and e-Payment

- Transportation

- Access Control

4.0. Technical Specifications

Physical Characteristics

Dimensions .... Main Body: 245 mm (H) x 135 mm (W) x 91mm (T)
.... With Back Mount: 245 mm (H) x 135 mm (W) x 159mm (T)
Weight... Main Body: 1.08kg
.... With Back Mount: 1.88kg
Case Color .... Grey and Black
Pole Support .... 31mm, 32mm, 35mm (Both Vertical and Horizontal)

Processor

ARM Cortex-A8 1GHz Processor

Operating System

Linux 4.4

Memory

Flash .... 900 MB (available for user)
RAM... 512 MB
Tamper Protected Memory .... 32KB (for sensitive data storage with API provided)

Power

Power Source................................ External Power Adapter (9 V – 36 V)
SuperCap UPS.............................. 5 seconds with full function after primary power source is lost

Connectivity

USB Host .... 2.0 Full Speed
Serial Port .... RS-232 x 1, RS-485 x 1
GPS[4] .... Supported with internal antenna (external antenna port available)
Wi-Fi.. IEEE 802.11 b/g/n
Cellular[5]....................................... 4G/3G/GPRS
Ethernet .... Built-in 10/100-base-T Ethernet
Bluetooth...................................... Bluetooth® 4.0 Dual Mode

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[4] *Can be optional*

[5] *Can be optional*

Contactless Smart Card Interface

Standard	ISO 14443 A & B, Parts 1-4, MIFARE Classic®, MIFARE DESFire®, MIFARE Ultralight®, MIFARE Ultralight C®, MIFARE Plus®, FeliCa, Calypso
Protocol	MIFARE Classic Card Protocol, T=CL
Operating Frequency	13.56 MHz
Operating Distance	Up to 50 mm

SAM Card Interface

Card Connector Type	Contact
Standard	ISO 7816 Class A, B and C (5 V, 3 V, 1.8 V), T=0 and T=1
Number of Slots	Four (4) SAM Slots, ID-000

Built-in Peripherals

Buttons	4 back-lit buttons
LCD Display	4.3-in TFT-LCD, 480 x 272 Colors
Touch Panel	Capacitive Type
Audio Speaker	3W Speaker, Buzzer
	Around 80 dB in 1 m distance
LED Indicators	Front: Blue, Orange, Green, Red
	Back: Green, Red
Memory	MicroSD memory card expansion slot
	Supports MicroSD memory card from 1 GB to 32 GB
Temperature Sensor	Supported

Barcode Scanner[6]

Linear	Code 128, EAN, Code 39, UPC, Code 2 of 5, Interleaved 2 of 5, Codabar, etc
2D	PDF417, Data Matrix, QR Code
Illumination	White LED
Supported Print Materials	Paper, Mobile phones and Tablets

Other Features

Security	Tamper Switch (internal anti-intrusion detections and protection)
Real-time Clock	Supported
Firmware Upgrade	Supported

Operating Conditions

Operating Temperature	-20 °C – 60 °C
Storage Temperature	-30 °C – 80 °C
Humidity	90 % max, non-condensing
Shock and Vibration	Military Standard MIL-STD-810
Protection from dust & water	IP54

Certifications/Compliance

ISO 14443, CE, FCC, REACH, RoHS

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[6] *Can be optional*

Appendix A. Frequency Band Support

ACR330-A1 (US 4G Module)		
	3G: UMTS / HSPA+	**4G: FDD-LTE**
	Band 2: 1900 MHz (PCS)	Band 2: 1900 MHz (PCS) Band 4: 1700 MHz (AWS)
ACR330-A4 (EU 4G Module)		
2G: GPRS / EDGE / GSM	**3G: UMTS / HSPA+**	**4G: FDD-LTE**
900 MHz 1800 MHz	Band 1: 2100 MHz (IMT) Band 8: 900 MHz (E-GSM)	Band 1: 2100 MHz (IMT) Band 3: 1800 MHz (DCS) Band 7: 2600 MHz (IMT-E) Band 8: 900 MHz (E-GSM)
		4G: TDD-LTE
		Band 38: 2600 MHz (IMT-E) Band 40: 2300 MHz Band 41: 2500 MHz