Operation Manual

ACR310/312 - Mobile Validator
REV 1.00

	Name	Signature	Date
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1.0. Introduction

Advanced Card Systems Limited developed this ACR310/312 Mobile Validator for a dedicated customer Cubic Transport Systems Inc. This document describes the basic operation of ACR310/312 Mobile Validator. This Mobile Validator is a smart payment terminal which can read/write different type of smartcards. Different connectivities are provided, e.g. Wi-Fi, Bluetooth, Ethernet, GPRS/WCDMA, USB, RS485, etc., for connecting with server or other devices. The typical applications are fixed payment systems in train stations, bus stops, buses, etc.

ACR312 is the model with 3G function while ACR310 isn't. The Operation System (OS) of the product is Windows Mobile 6.5. The basic operations of Windows Mobile will not be described in this document.

Marketing models number of customer:

Engineering Model	Marketing model of customer
ACR310	5300-10009-4
ACR312	5300-10009-3

2.0. Powering Up

To power up the device, insert a power cable with 12V/24V DC source to the device at the DC power socket indicated at the location below:

RJ11 (RS485)

USB Client

USB Host

RJ45 (Ethernet)

DC Power (8V-36V)

Battery door
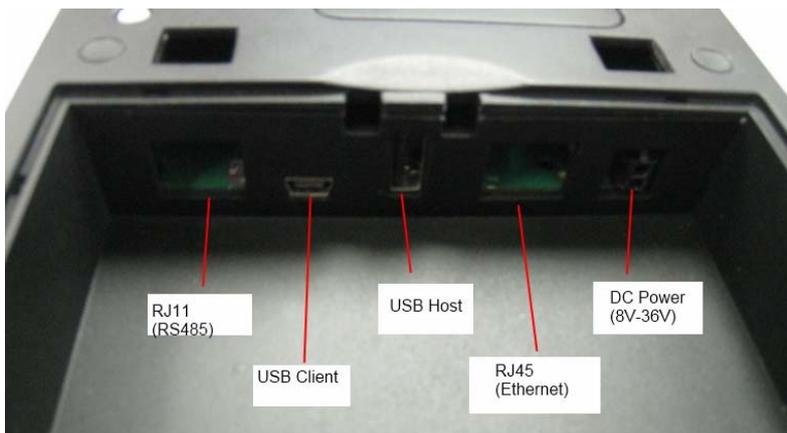
Power connector at Mobile Validator
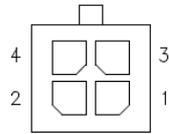
Pin	Functions
1	Reserved (Don't connect)
2	GND
3	Cable Shield (if available)
4	DC+ (12/24V)

A optional rechargeable battery can be inserted at the back. It acts as a backup battery when the external power is suddenly removed. So, the application software can perform some clearing tasks before going to sleep mode.

3.0. Main Functions

3.1. Smartcard reader

The Mobile Validator is with a 13.56MHz smartcard reader built-in. The demo application software running at startup read cards continuously. When we present a card in front of the antenna, the demo application software will show a corresponding message.

Smartcard antenna

To exit the demo application, insert a mouse to the device and click any white area at the side.

3.2. Wi-Fi

Wi-Fi has been enabled by default. To enable or disable Wi-Fi function, use a mouse to select: ➔ Settings ➔ Connections ➔ Wireless Manager, then click the Wi-Fi bar.

To connect to a network, go to Wireless Manager, then click Menu➔Wi-Fi Settings. Then you can see the networks in scope. Click the network that you want to connect and fill in the necessary information (e.g. password).

3.3. Bluetooth

To enable or disable Bluetooth function, use a mouse to select: ➔ Settings ➔ Connections ➔ Wireless Manager, then click the Bluetooth bar.

To configure the Bluetooth settings (e.g. set discoverable), go to Wireless Manager, then click Menu➔Bluetooth Settings.

3.4. USB Host

The USB host port is compliant with USB 1.1 full speed. USB devices (e.g. mouse, keyboard, USB hub, etc) can be connected to the mobile validator via this port. For standard HID device (e.g. mouse) or mass storage device (e.g. USB drive), no driver is needed.

3.5. USB Client

The USB client port is compliant with USB 2.0 high speed. The mobile validator can connect to a host (e.g. PC) via this port. This port is intended for application development and debugging but not for actual application.

PC will recognize the mobile validator as a windows mobile device. It can access the mobile validator via ActiveSync.

3.6. Ethernet

An Ethernet port is provided for connecting to network via RJ45 cable. By default, it uses dynamic IP address. So, when you connect the mobile validator to a network with DHCP server, it should be able to get the IP address automatically.

Cable can be plugged to the mobile validator before or after booting up.

3.7. 3G / GPRS (ACR312 only)

Before using the 3G/GPRS feature, a SIM card should be installed in the SIM slot before powering up the device.

3G/GPRS is enabled by default. To enable or disable the 3G/GPRS feature, use a mouse to select: ➔ Settings ➔ Connections ➔ Wireless Manager, then click the Phone bar.

Before using the 3G/GPRS service, the proper APN (Access point name) should be configured. Go to ➔ Settings ➔ Connections. Select "Add a new modem connection. In the field of "Enter a name for the connection", enter an arbitrary name. In the field of "Select a modem", select "Cellular Line (GPRS)". In the next page, enter the proper APN provided from the GSM service provider. In the next page, leave all the "User name", "Password" and "Domain" fields as blank.

3.8. RS485

A general purpose RS485 interface is provided via a RJ11 connector. It can be accessed by opening COM0 in the application software. The pin assignment is indicated as below:

Pin	Functions
1	Reserved (Don't connect)
2	Reserved (Don't connect)
3	Reserved (Don't connect)
4	RS485 D+
5	RS485 D-
6	GND

RJ11 Connector at Mobile Validator

USB Client Port

6 5 4 3 2 1
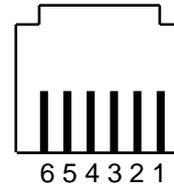
3.9. GPS

The mobile validator has a build-in GPS receiver with integrated antenna. The GPS is enabled when the COM5 is opened by an application. In the MicroSD card, the tools "GPSInfo" and "putty" can be used to open the COM5 and hence enabling the GPS.

3.10. Audio

The mobile validator has a speaker to generate music/sound/tone.

3.11. SAM card slots

The mobile validator has 4 SAM slots under the rechargeable battery. The card should be inserted before powering up the device.

3.12. MicroSD card slots

The mobile validator has 1 MicroSD card slot under rechargeable battery. The card should be inserted before powering up the device. With the MicroSD card inserted, the card content will be mapped to the path "Storage Card".

If there is an executable file "autorun.exe" exists in the MicroSD card, the mobile validator will automatically launch it after power up.

3.13. Rechargeable Battery

A rechargeable battery is provided. It acts as a power backup when the external power is accidentally removed. So, the application can still keep running if the external power is removed for a short period of time.

4.0. FCC/IC Caution

FCC Caution:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This transmitter must be installed to provide a separation distance of at least 20 cm from all persons. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

IC Warning ：

Operation is subject to the following two conditions:

(1)this device may not cause interference.

(2)this device must accept any interference; including interference that may cause undesired operation of the device.