PRODUCT MANUAL

VALINA

the next generation

compact, convenient, complete

an atos company

worldline
e-payment services

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Document information

document title	VALINA product manual
security	unrestricted
last modified	6 June 2016
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document release	0.1

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About this book

This book provides product information about:

- the VALINA terminal and its accessories
- technical specifications
- security considerations
- approvals and certifications, including applicable environmental regulations
- VALINA parts list

Who should read this book

This book is intended for:

- anyone who will be installing a VALINA terminal in a vending machine or other equipment
- field and service technicians working on a VALINA terminal

Information from this book may be reused in other documentation such as a user guide

Introduction

The VALINA is an intelligent all-in-one terminal for unattended payments with and without PIN, supporting a range of standards including EMV and Mifare. It handles payments by chip card, NFC cards and devices, and magstripe card.

The VALINA is PCI 4.x certified, SRED included. It has been designed to provide a complete solution for EMV payments, and can run either newly-developed Android apps or legacy apps (written for the MAPS platform) from Worldline.

Key hardware features include:

- 3.5” touch TFT colour display for an enjoyable payment experience
- small footprint matches EVA/CVS 1.3 standards for Standard Door Module (SDM) dimensions, making integration in vending machines easy

  The VALINA takes up limited space inside the machine: compare this with the footprint of a bank note acceptor (BNA) or coin detector.
- onboard Ethernet, serial interface, MDB, USB host and USB device meet most communications requirements out-of-the-box
- proximity detector (patented) for improved power management

Typical integration scenarios for the VALINA include:

- vending machines, ticket machines and kiosks
- petrol forecourts and car-washes
- on-street and off-street parking
- dispensers and pre-payment meters
- self-service checkouts

Security recommendations

For security reasons, merchants are advised to check their VALINA regularly for:

- unusual cables connected anywhere on the terminal
- visible damage to the housing

Display

The VALINA incorporates a touch-sensitive TFT 64K colour display. The display size is 320 x 480 pixels, 3.5 inches.

valinaDisplay

Figure 1. VALINA

Technical specifications

This chapter provides a summary of the technical specifications, followed by additional information on:

- external interfaces
- processor
- customisation options

Size and weight

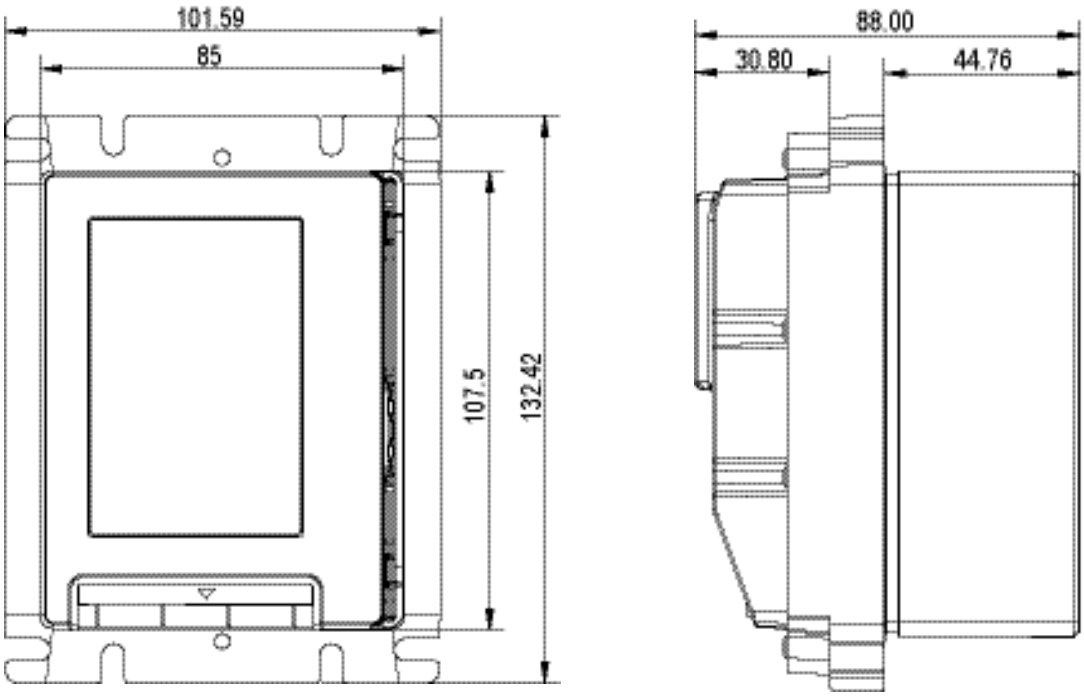

Figure 2. General dimensions

- size: 132.42 x 101.59 x 88.00 mm (height x width x depth)
- weight: 573g

For exact measurements, including tolerances, download drawing 3034910003 from the Partner Extranet.

Integration dimensions – indicative

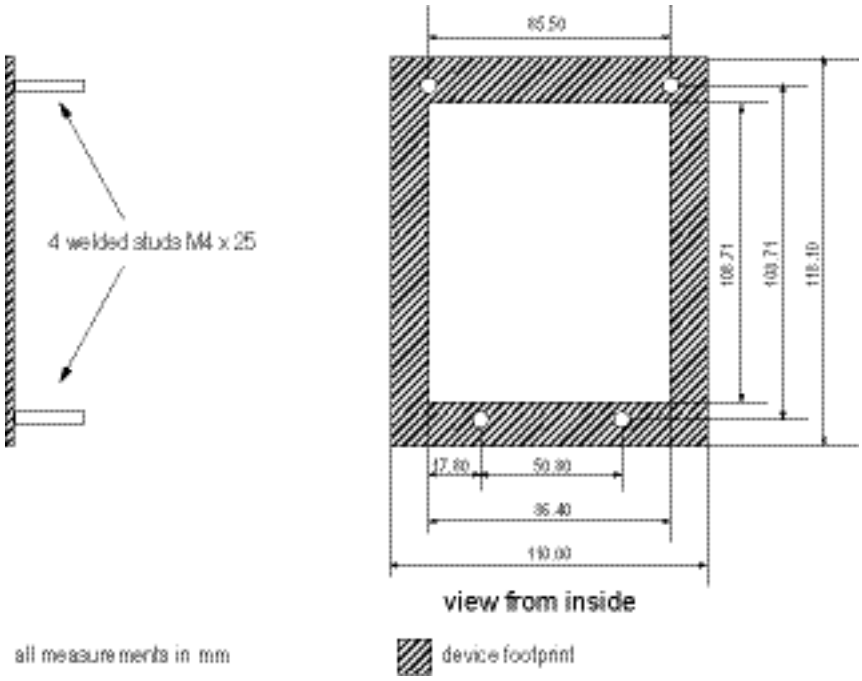

Figure 3. Internal mounting details for VALINA

For exact measurements, including tolerances, download drawing 3034910003 from the Partner Extranet.

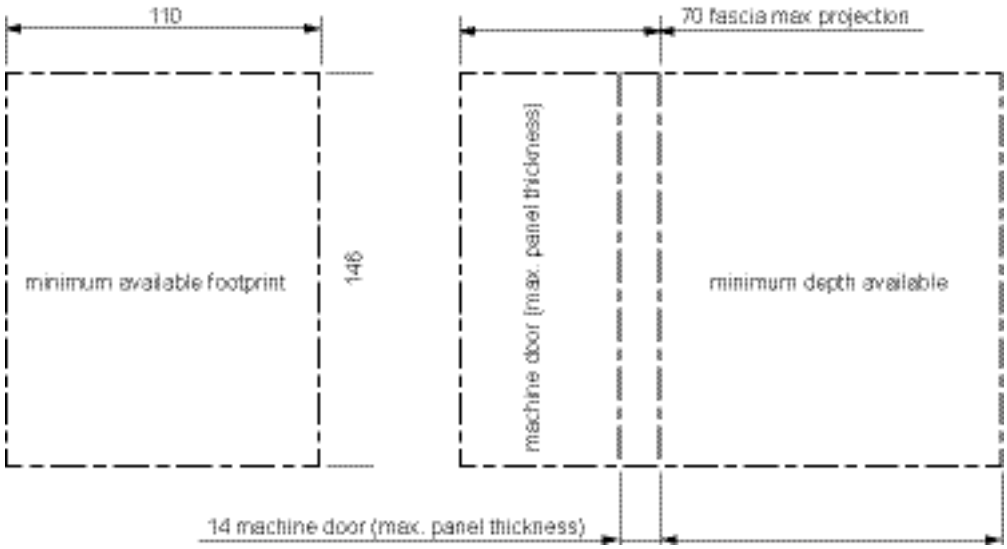

Figure 4. Minimum required space (from EVA Specs)

External interfaces

There are six sockets available for connecting the VALINA to external peripherals. The picture shows the sockets in the connector area at the back of the VALINA.

fig_column

Figure 5. Indicators, connectors and controls

1 RS-232

RS-232 port with RTS/CTS flow-control, for connecting peripherals such as ePOS equipment or a printer. The port allows connection speeds up to 115,200 bps and is fitted with an 8p RJ45 connector.

2 Ethernet

Ethernet connection 10/100 Mbit, using an RJ45 connector.

3 USB host

USB 2.0 full speed (up to 480 MBit/sec) host interface, which can be used to connect to a USB stick or other storage device.

4 USB device

USB 2.0 Full Speed (up to 480 MBit/sec) device interface, which can be used to connect to ePOS equipment/PC and to perform key loading.

5 TTL

TTL connector Microfit 43045, providing power supply, one output and up to three inputs: used to attach a peripheral to the terminal.

6 MDB

MDB interface supports the MDB 4.2 protocol, for communicating with vending machines or other devices supporting the standard.

Reset button

The reset button is used to reset the terminal without unplugging the power. For application developers, it provides an easy way of rebooting the terminal. The reset button is slightly recessed to prevent accidental use.

Menu button

The menu button can be used to activate a menu on the terminal, for example to check settings.

Reading cards and devices

The VALINA contactless reader is ergonomically designed and supports fast, fully secure payments with both contact and contactless cards and devices of all signalling schemes defined in the ISO14443 standard.

fig_column

Figure 6. Front view	

contactless cards/devices

The landing zone for contactless payment is:

- illuminated, easily recognisable and accessible
- marked by the contactless symbol

The contactless symbol is placed where the signal is strongest, and shows the “landing zone” where customers should tap the card or device

chip (contact) cards

- the chip-card reader is at the bottom of the terminal, 45° from the vertical
- the slot is illuminated to show the user where to insert the card

magstripe cards

- the magstripe-card reader is on the right-hand side of the terminal
- cards are swiped from the top of the slot to the bottom

Operating the contactless reader

VALINA is designed for use with both contact and contactless cards/devices. Contactless cards/devices may be tapped on the front of the terminal. The terminal can communicate with cards up to 40mm from the reader, in line with the EMV standard.

Other characteristics include:

- contactless communication in 13.56MHz band
- contactless communication up to 424kbit/s
- ISO/IEC 14443A
- ISO/IEC 14443B
- MIFARE classic/desfire compatible
- FeliCa compatible
- ISO/IEC 18092 NFCIP-1
- integrated LEDs indicate NFC transaction progress

The VALINA offers card holders the real “tap & go” experience. Thanks to the powerful antenna in the terminal, the contactless device only has to be held near the landing zone.

Software engines for contactless transactions

The MasterCard PayPass and the Visa payWave engines are available. Other engines, for example American Express ExpressPay, can be provided on customer request. Specific contactless applications are developed locally, since they deal with communications between terminal and host.

Security application Modules (SAM)

VALINA contains two internal chip card interfaces (type ID0) for security application modules (SAM). Both 3V and 5V SAMs can be read. Standard current provided to the SAMs is 55 mA.

To reach the SAM slots, the telecom cover needs to be opened using a Torx screwdriver.

System on chip ASIC

The processor for the new generation of terminals from Worldline is a high-tech Application Specific Integrated Circuit (ASIC). For the VALINA, this single chip provides all essential features, including:

- ARM Cortex A9 main processor (600 MHz)
  - security / communication core
  - application / communication core
- 512 MB RAM memory
- 4 GB memory
- real-time clock (RTC)
- hardware DES / 3-DES encryption device
- Linux and Android operating systems
- support for MAPS/Linux applications

Audio

VALINA is equipped with a speaker for audible feedback to the user. Developed to generate single tones, it can also play music (supported formats include mp3 and wav) and voice output.

Other features

security 3DES, AES and RSA encryption algorithms

DUKPT key management (other schemes available on request)
SSL (v3.0) additional security schemes available

power supply

either of:

- 12 VDC via Microfit
- 24-45 VDC via MDB

different power management profiles can be used

software

Linux and Android operating systems
Linux-based development kit (C and Java)
secure remote download of software

hardware integration options

hardware integration kit
key-loading interface

communications and peripherals

standard Ethernet interface
1 x RS232
1 x USB device
1 x USB host
1 x MDB interface
1 x I/O (1 out, 3 in)
comms board interface
microSD card slot
proximity detector

Accessories

A number of optional accessories are available, to make the VALINA easier to use and integrate:

communication boards

Separate boards and external antennas are available for Bluetooth/WiFi, 2G and 2G/3G communications.

Only one board at a time can be fitted. Any extra communication board must be requested when ordering the VALINA.

debug cable and connector

To facilitate software development, a debug cable and connector is available. (delivered as standard with a VALINA development terminal) The cable connects to the internal electronics of the terminal, making it possible to develop and validate a payment application on a PC before transferring it to the terminal.

power adaptor

plug-in adaptor (Microfit) 12 VDC, 2A

Development environment

Developing custom applications for the VALINA is supported by a development terminal and a complete software development kit (SDK).

SDK

The VALINA platform includes a professional, full-featured, Linux-based application development environment supporting both C and Java. An SDK for Android will be made available in phase 2.

development frameworks

- backward-compatibility environment (MAPS), making it easy to port existing applications to VALINA
- application programming environment, for developing new applications that exploit the full functionality of VALINA

comprehensive set of development tools

C and Java development tools for MAPS applications

comprehensive documentation

- description of the MAPS Application Programming Interfaces (API) for C and Java
- introduction to the System-on-Chip hardware, software and security architecture
- interface design guidelines
- application development and porting guidelines

Logistics information

This chapter provides:

- samples of labels for the VALINA terminal, accessories and packaging
- information on product packaging

Terminal label

Examples of product labels are provided to show what information is given on each label. Minor differences in layout may occur.

Figure 7. Terminal label

The VALINA terminal label shows:

- maker's name: Worldline
- model name: VALINA
- article number, referring to the specific terminal hardware

  This number identifies the specific terminal hardware and customisations, and is used for certification purposes. It is not the same as the commercial article number mentioned on the packaging box, which is customer-specific.

- serial number:
  - human-readable, for example Serial N°: AZY3694
  - barcode
- production date in the format yywk, so 1631 for week 31 in 2016
- country of origin: Made in Singapore
- voltage and current: 12.0 VDC 2 A
- safety labels, for example CE, FCC
- WEEE-logo

MAC address label

Figure 8. MAC address label

The MAC address label contains communications and software information.

- MAC address, which can be
  - read from the barcode
  - consulted via software
- HW/ID (hardware ID) made up from a four-character prefix – 424B in the example – followed by the hexadecimal MAC address – 00B81901805A in the example

  the full HW/ID is not provided as a single barcode
- HW (production) code, for example TT002

  this information can also be read from the barcode
- REV (hardware revision code)