

XENTISSIMO

Product manual



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Product Manual XENTISSIMO

Version 1.0

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Introduction

XENTISSIMO, Banksys' newest mobile payment terminal holds all the aces to promote electronic payment in all circumstances: it is compact, lightweight and ultimately portable; it is wireless, mobile and incomparably fast; it has been designed for easy and long-lasting usage.

XENTISSIMO can process all types of magnetic-stripe and chip cards for payment and non-payment applications.

The Banksys designed "System-On-a-Chip", hosting a full-featured Linux operating system, powers XENTISSIMO. Maximum-security measures have been taken in the ASIC, in the physical terminal design and in the software.

XENTISSIMO complies with the latest international security, safety and payment standards.

XENTISSIMO, innovation on the move!



XENTISSIMO

PRODUCT MANUAL

List of acronyms

The list below contains a number of acronyms that are used in this document.

Acronym	Meaning
ADA	American Disability Act
ADSL	Asymmetric Digital Subscriber Line
ASIC	Application Specific Integrated Circuit
bps	Bits per second
CSM	Chip Security Module
DES	Data Encryption Standard
dpi	Dots per inch
EC	European Commission
ECR	Electronic Cash Register
EMV	Europay, MasterCard, VISA standard
FIFO	First In First Out
GHz	Giga Hertz
GPRS	Global Packet Radio Services
GSM	Global System for Mobile communication
IEEE	Institute of Electrical and Electronics Engineers
IMD	In-mould Decoration
ISO	International Organisation for Standardisation
LAN	Local Area Network
MAC	Media Access Control (address)
mAh	Milli Ampere hours
MB	Megabyte
Mb	Megabit

Mbps	Mega bits per second
MHz	Mega Hertz
NiMH	Nickel Metal Hydride
PC	Personal Computer
PCI	Payment Card Industry
PED	PIN Entry Device
PIN	Personal Identification Number
RAM	Random Access Memory
RoHS	Restriction of Hazardous Substances
RSA	Rivest, Shamir, Adleman encryption
SAM	Secured Application Module
SIM	Subscriber Identity Module
SMS	Short Message Service
SSL	Secure Socket Layer
TCP/IP	Transmission Control Protocol – Internet Protocol
USB	Universal Serial Bus
VAC	Volts Alternating Current
VDC	Volts Direct Current
WEEE	Waste Electrical and Electronic Equipment
WEP	Wired Equivalent Privacy
WPA	Wireless Protected Access
WiFi	Wireless Fidelity
WLAN	Wireless Local Area Network
ZKA	Zentraler Kredit Ausschuss (German: Central Credit Committee)

General description

XENTISSIMO, for easy payment on the go

Sleek, flat and lightweight, XENTISSIMO fits comfortably in your hand but also in your suitcase, your car and even your pocket. It thus provides an unequalled level of mobility. The large graphic display, the highly accessible card interfaces, the ergonomic keypad design and backlit keys greatly accommodate the needs of the customers. The high-speed and silent printer is integrated in the design. Carried around most of the time, XENTISSIMO has been designed to withstand tough daily use.

XENTISSIMO, for wireless communication

With its wireless LAN (WiFi) interface, XENTISSIMO is yet another member of the already large family of Banksys IP-capable terminals. It can transmit data, through the air, to an access point within a range of a hundred meters through walls, ceilings and other non-metal barriers and can easily roam between several access points installed. The terminal presents the ideal solution for restaurants, in-store promotion teams, petrol forecourt sales and many other environments.

Even greater mobility is achieved via GSM/GPRS. It features full roaming capacity with built-in support for tri-band networks and offers fast, reliable and cost-effective transaction processing. This solution is ideally suited for taxis, home delivery services, field technicians and the like.

XENTISSIMO, for continuous operation

XENTISSIMO is equipped with an intelligent, rechargeable Lithium-Ion battery. This long-life battery, combined with its power-management capabilities, guarantees XENTISSIMO to work for 300 transactions a day and one ticket printed per transaction. Over a period of 4 days an average of 50 transactions a day is ensured. In stand-by mode (GSM/GPRS active), guaranteed uptime is at least 7 days. The XENTISSIMO battery can be charged either directly via the power adapter or while placed in its cradle (for in-door or in-car use). Recharging an empty battery takes about 2,5 hours.

XENTISSIMO, for power and speed

XENTISSIMO and the XENTA countertop terminal are both powered by the same state-of-the-art ASIC. This innovative dual-processor / single-chip solution accounts for superb transaction speed, ultimate payment security and optimum cost-effectiveness. The operating system running on the XENTISSIMO terminal is a full-featured Linux system. The established Linux development environment, completed with comprehensive documentation, allows for easy and rapid application development in Native C or Java on a “standard” Linux PC.

Banksys, your partner in secure solutions

Fold it out, fold it in. Easy as that! The PIN privacy shield, the most tangible security feature, has smartly been incorporated in the design. Thanks to the patented concept of the convertible shield the design of the terminal, when not in use, could be kept very flat. Actually, XENTISSIMO can only operate when the PIN privacy shield is in the upright position, thus releasing both the chip-card interface and the magnetic-stripe reader.

Maximum-security measures have been taken in the ASIC, in the physical terminal design and in the software. All of those contribute to the permanent protection of sensitive information and to the instantaneous erasure of sensitive data if tampering is detected.

Accessories for maximum convenience

XENTISSIMO is standard equipped with a belt clip to facilitate daily carrying on a waiter's belt, but other systems are available: a heating oil distributor might appreciate a shoulder strap, a stallholder an anti-theft cable. To put the terminal aside temporarily or charge the battery, a cradle is available. It can be used in-door on a countertop or wall mount, but it also suits cars, taxis or trucks. When used in-door, the cradle is powered via a power adapter. In a car, it is powered via direct wiring or via a cigarette lighter plug. The cradle can be equipped with a terminal drop protection.

Technical specifications

Dimensions and weight

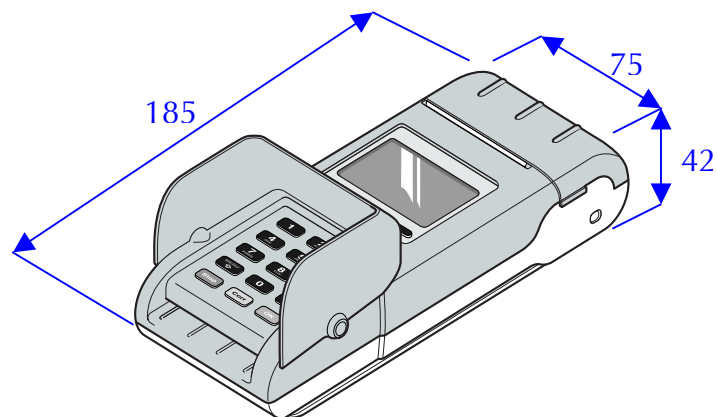


Figure 1 – Terminal dimensions

Dimensions: 185 x 75 x 42 mm (l x w x h)

Weight: 380 g (including printer, paper roll and battery)

Keypad

XENTISSIMO keypad consists of 18 keys.

The figure below shows the standard keypad layout, these 18 keys include:

- 10 numeric keys
- The decimal symbol key: “.”
- The Menu key
- 3 command keys: “Stop”, “Corr” and “OK”
- 3 programmable function keys (soft keys), located underneath the display, for navigation, selection and specific functions.

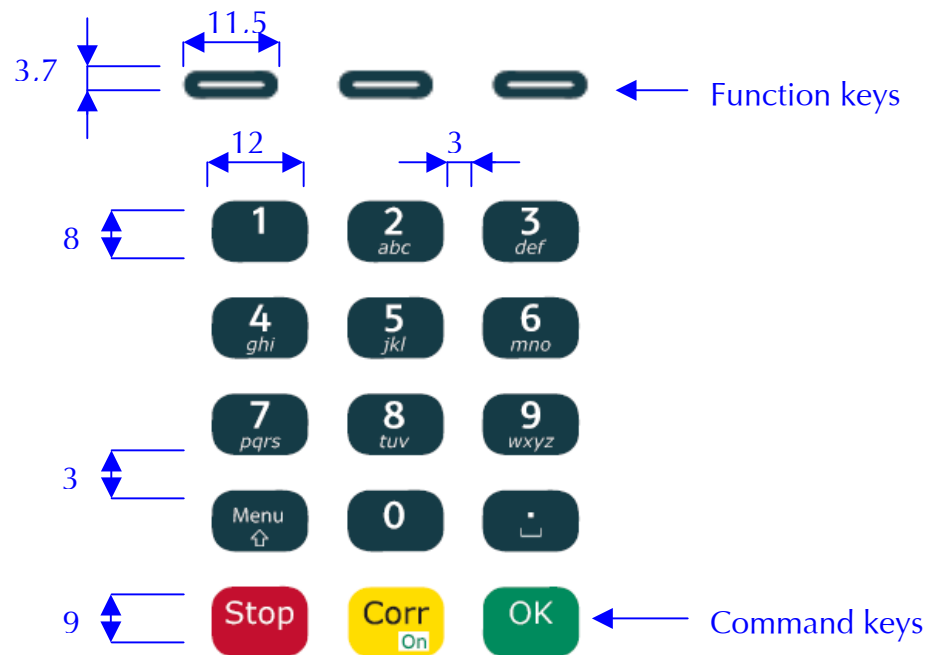



Figure 2 – Keypad

This keypad layout complies with ISO 9564-1, EN1332-3 and EMV 4.0 standards. The alpha mapping, having the letters on keys 2 to 9, complies with the European ITU E.161 and EBS 100 v3 standards and the American ANSI NCITS 118-1998 standard.

The “” is used during alphanumeric entry to switch between lowercase and uppercase characters.

The “” is the space symbol used during alphanumeric entry.

The “” is to activate (to power on) the XENTISSIMO terminal.

Aiming at utmost accessibility, Banksys has enhanced its keypad design with the following features:

- Main keypad clearly bounded by the PIN privacy shield, preventing function keys to be touched accidentally;
- Tactile identifier (embossed dot) on key 5;
- Embossed symbols on the command keys: “X” on the “Stop” key, “<” on the “Corr” key and “O” on the “OK” key. The symbols are according to the EBS 100 v3 standard;
- Key shape differentiating the command keys from the numeric keys;
- Digits in Tiresias font, alphanumeric characters in Verdana font, with a well thought-out usage of uppercase and lowercase characters to increase readability;
- Key distance, tactile feeling and key main character size according to the ADA regulations;

- White key backlights to illuminate the main key character, improving the contrast. For power management reasons, it might be appropriate to activate the backlight in dim conditions only (controlled by software);
- Keypad made of polycarbonate material with keys printed on the inner side through IMD-technique, preventing wear and tear.

Diverging keypad layouts will be available upon customer request.

Display

XENTISSIMO has a monochrome graphical display with a bright white backlight. Its resolution is 128 x 64 pixels (w x h) and the view area is 52,6 x 27,5 mm (w x h).

Up to 20 characters can be displayed on each of 6 lines; 8 lines are possible, but not advisable for legibility reasons. Per character a space is available of 6 x 9 pixels (w x h).

The display contrast and backlight intensity are controlled by software.

Following screenshots illustrate some of the possibilities:

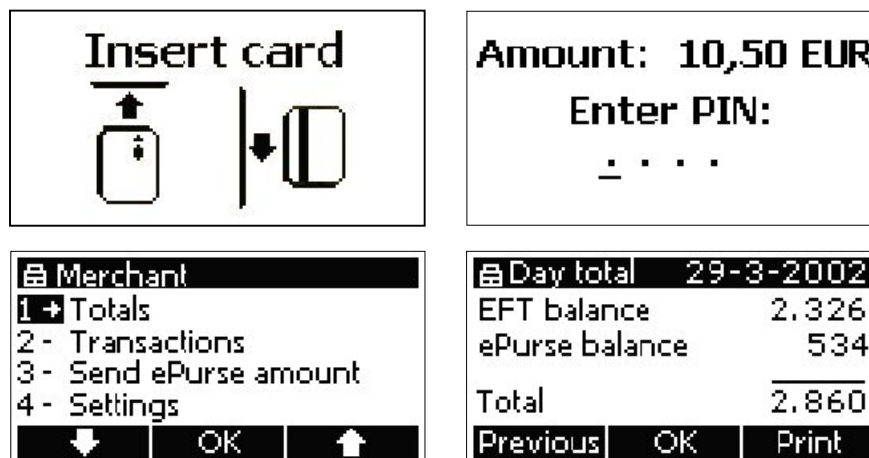


Figure 3 – Display

Related to ergonomics:

- Display size and resolution offer a very good readability;
- Readability is the best when using a sans-serif font (for example Tiresias, Verdana) and uppercase / lowercase text;
- White backlight improves the display contrast.

Card interfaces

The terminal has two card interfaces:

- A chip-card interface conforming to EMV 4.1 level 1;
- And a triple-track magnetic-stripe reader (ISO 1 / 2 / 3).

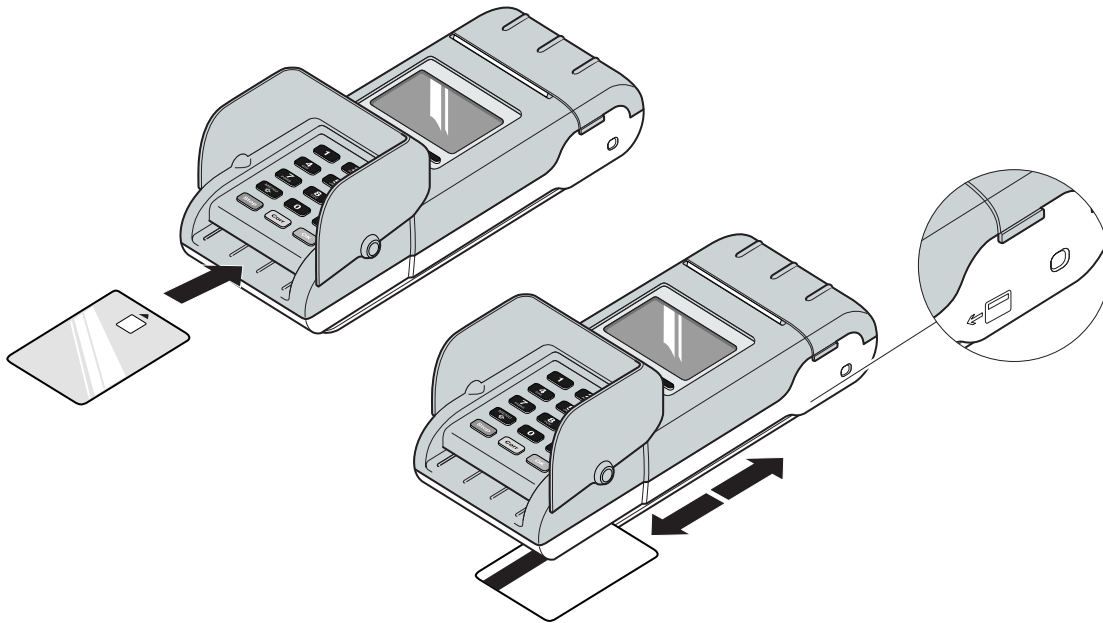


Figure 4 – Card interfaces

To accommodate the customers' needs, following design choices were made:

- The chip-card interface is located at the front side, closest to the cardholder;
- The magnetic-stripe reader is located on the right side of the terminal;
- With both card slots in distinctive positions on the terminal, users are less likely to confuse the two slots;
- The magnetic-card reader has an extended card guidance for optimal reading quality;
- When the integrated PIN privacy shield is in the upright position, both card interfaces are easy accessible;
- Clear pictograms on the terminal housing and on the display explain how to insert a chip card or to swipe a magnetic-stripe card. The display icons are application-specific.

PIN privacy shield

To prevent shoulder surfing when entering a PIN code, a privacy shield has smartly been integrated in the design. Fold it out when performing transactions; fold it in when not in use. Easy as that!

This patented concept helps to keep the shape of XENTISSIMO very flat, making it easy to carry it in the hand, on a belt, in a suitcase etcetera. Besides that, the position of the convertible shield also determines whether XENTISSIMO is operational: only when it is in the upright position, both the frontal chip-card interface and the lateral magnetic-stripe reader are accessible.

The pivoting mechanism, based on the combined use of specially shaped notches and springs, makes sure that the shield remains properly in place in either position.

The PIN privacy shield complies with the latest international security regulations like PCI PED.

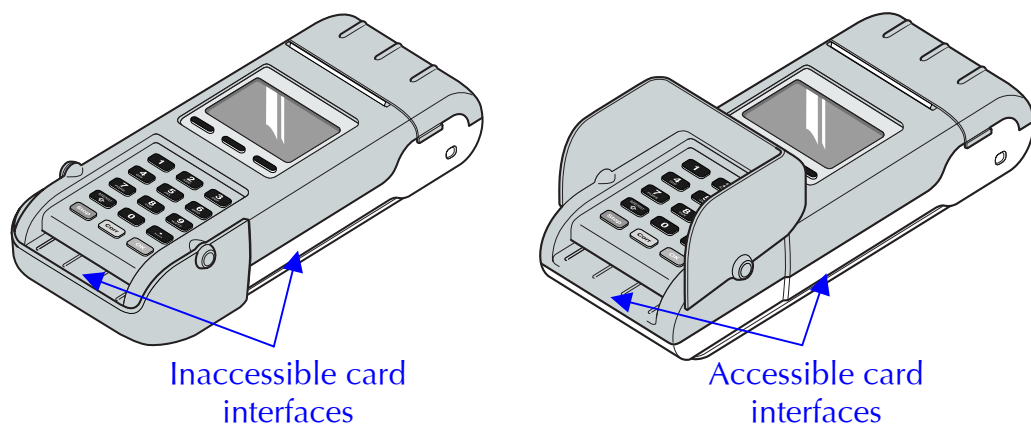


Figure 5 – PIN privacy shield

Printer

XENTISSIMO integrates a high-speed, silent printer. It is a thermal graphic model with following main specifications:

- Printing speed of 40 mm / s for normal text tickets and graphics of maximum 64 dots per line. This means at least 15 printed lines / s when using a font height of 2,5 mm and black printing. This speed increases when printing characters less black, using smaller fonts, having more white areas on the ticket, etcetera;

- Resolution of up to 8 dots per mm, 384 dots per line. Within these values every font can be supported;
- Printing width of 48 mm;
- Easy paper-load mechanism;
- Detections for paper present and overheating.

Paper rolls with a width of 58 mm and a length of 10 m can be used.

Tip: Use only Banksys-approved paper. Our paper specifications are available upon request. Using other paper may damage the printing system.

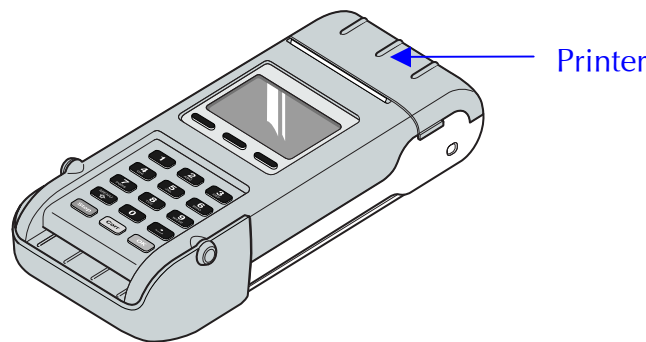


Figure 6 – Printer

Wireless communication

Being a mobile terminal, XENTISSIMO communicates with the host completely wireless.

Wireless LAN

Every XENTISSIMO is equipped with a wireless LAN (WiFi) interface, making it a node in a local area network without wires. Other players can be ticket printers, computers, cash registers, more XENTISSIMO terminals etcetera. Data is transferred, through the air, via radio frequencies (in the 2,4 GHz band) to an access point within a range of a hundred meters through walls, ceilings and other non-metal barriers. The access point regulates the traffic between the devices in the wireless and the wired LAN to which it is connected. Via an integrated or separate modem, host communication can be set up for use with ADSL or cable

TV infrastructure. We suggest that these transactions are secured, from terminal to host, using SSL (Secure Socket Layer).

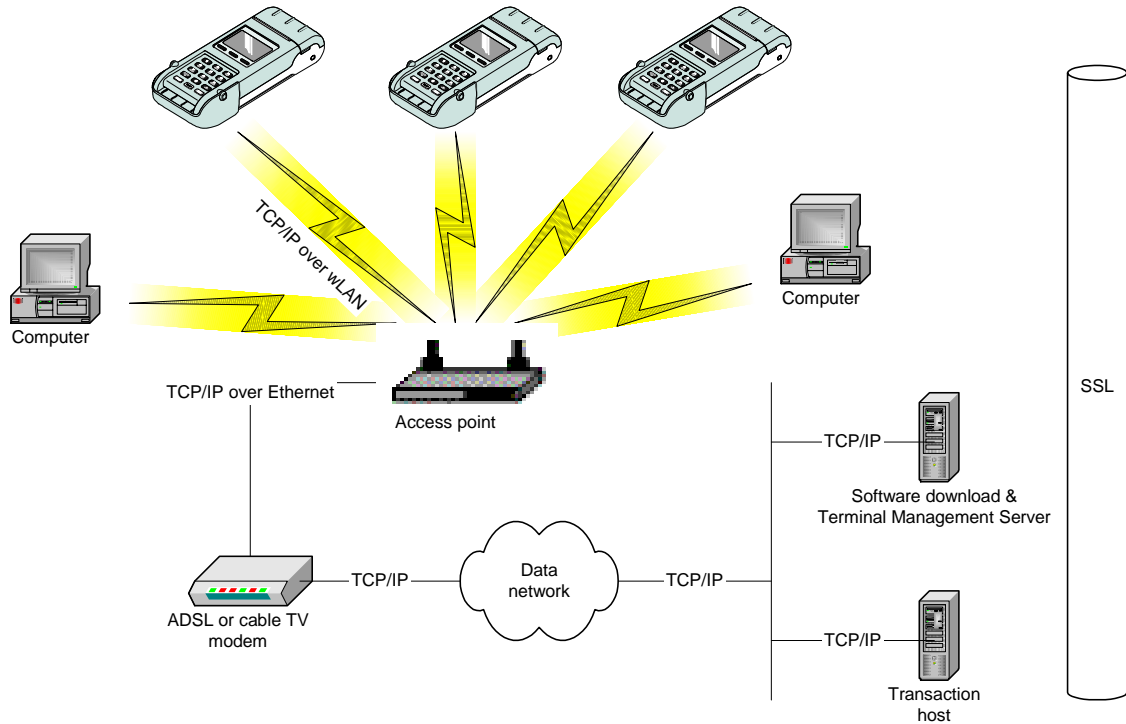


Figure 7 – Wireless LAN configuration with access point

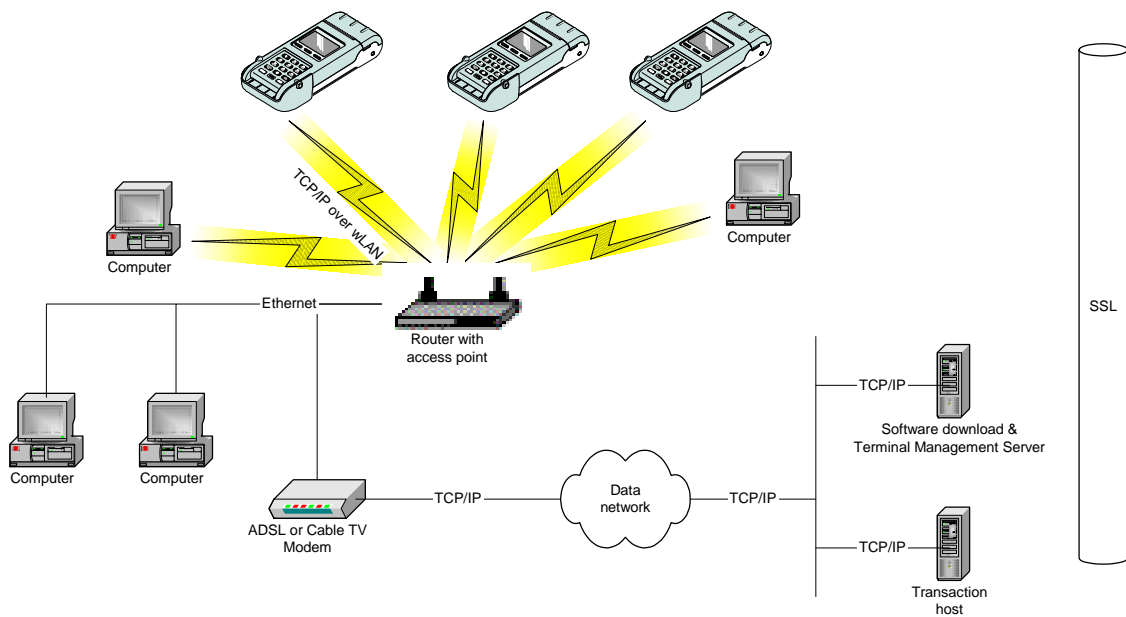


Figure 8 – Wireless LAN configuration with router

When several access points are installed, XENTISSIMO roams between them to connect, in any condition, to the most trusted one.

XENTISSIMO will adapt to the security installed on the access point. For example WEP, WPA, WPA2, etcetera.

WiFi is more complex than Bluetooth point-to-point communication. It requires the same level of network management as any comparable wired network. Yet, it offers more flexibility, is more widespread and has a better coverage. WiFi access points always support multi-sessions, which means that they can transmit parallel data and that a virtually unlimited number of devices can communicate wireless to the access point.

The XENTISSIMO wireless LAN interface has the following main specifications:

- According to IEEE 802.11b standard;
- Low-power, small form-factor, integrated solution;
- Communication speed of up to 11 Mbps through the air. The net data rate is lower due to protocol overhead, it's a few Mbps;
- Fast interface for development purposes and software download;
- Two antennas, integrated in the terminal to achieve an optimal range of about 100 m using antenna diversity. This means that the access point will switch reception to the antenna receiving the stronger signal.

Tip: Beware that this range will be reduced when the access point is positioned next to a PC screen (strong magnetic field), when microwaves disturb the signal, when the signal has to pass through a reinforced concrete ceiling (metal bars), etcetera.

GSM/GPRS

Even greater mobility is achieved by mounting (in production final assembly) a GSM/GPRS module onto the XENTISSIMO main board. Thus you have a terminal with combined wLAN and GSM/GPRS capabilities.

-
- Tips:**
- The GSM/GPRS module is not replaceable by a technician;
 - The GSM module does not support voice.
-

For a GSM transaction, a wireless connection is set-up with the host to send the data back and forth.

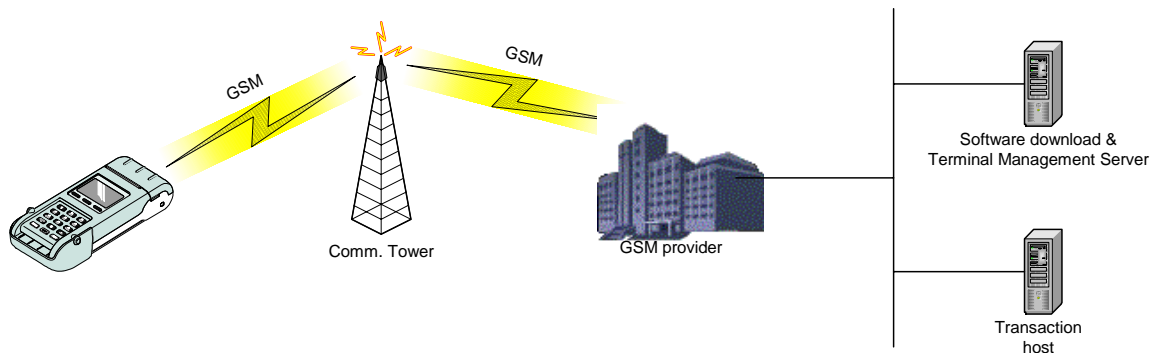


Figure 9 – GSM configuration

For a GPRS transaction, the data is sent to the communication tower from where it's transmitted over a data network, which might be the public Internet, to the host. The protocol used is TCP/IP. We suggest that these transactions are secured, from terminal to host, using SSL (Secure Socket Layer).

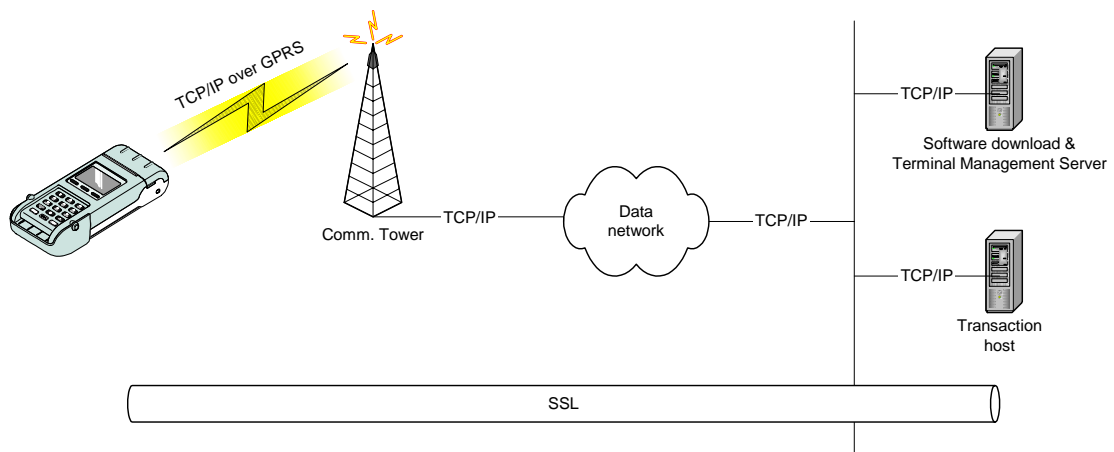


Figure 10 – GPRS configuration

The GSM/GPRS interface has the following main specifications:

- GSM supports communication speeds of up to 14.400 bps, via the GSM V.110 data or analogue data protocol;
- GPRS class 10 supports data rates of up to 85.600 bps in download mode (from host to XENTISSIMO) and 42.800 bps in upload mode (from XENTISSIMO to host);
- Full roaming service;
- SMS capability: XENTISSIMO can send and receive messages of maximum 160 alphanumeric characters;

- Two versions available: an international tri-band 900-1800-1900 MHz version and an 850-1800-1900 MHz version for certain areas in the USA;
- Quad-band antenna integrated in the terminal;
- One dedicated SIM slot, accessible when removing the battery cover and battery at the terminal rear side.

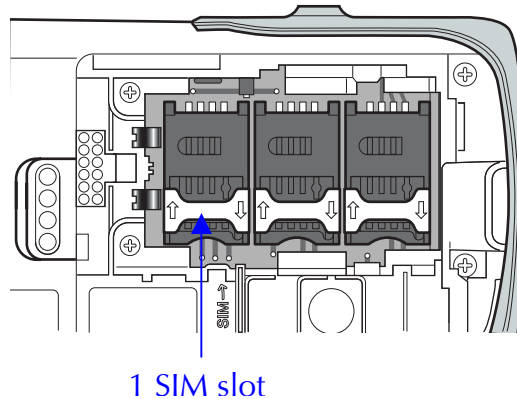


Figure 11 – SIM slot

Interfaces

XENTISSIMO is equipped with one serial RS232 interface. The connector is of the 10-pole MMIC type. A small rubber cap protects the serial jack.

This interface can be used to:

- Connect XENTISSIMO, wired, to an electronic cash register, PC, bar code reader, ticket printer, etcetera;
- Perform key loading.

Banksys can supply the appropriate cable.

XENTISSIMO can communicate to a USB master device (like a PC, an electronic cash register) via an USB-to-serial converter cable.

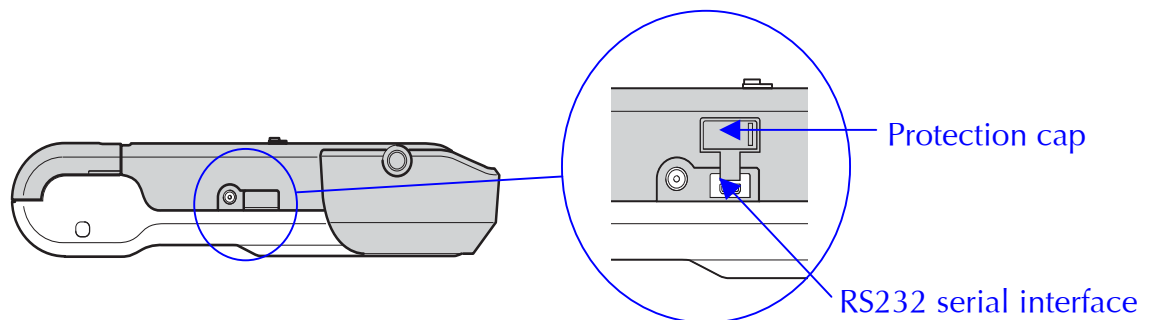


Figure 12 – RS232 serial interface

Chip Security Modules

XENTISSIMO has two internal chip-card interfaces (type ID0) for chip security modules (CSM, SAM) able to read 3,3 V and 5 V CSMs. The two slots together receive up to 80 mA; one of the slots can be used as PSAM supporting 50 mA current usage.

To reach the CSM slots you need to remove the battery cover and battery at the terminal rear side.

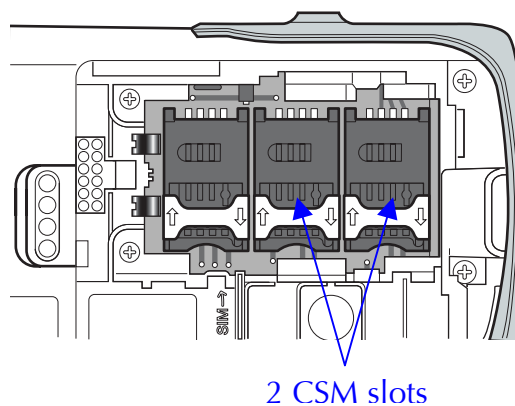


Figure 13 – Chip Security Modules

Banksys' designed "System-on-Chip"

A lot of functionalities are integrated in the high-tech ASIC, the engine of both the XENTISSIMO and the XENTA countertop terminal:

- 2 x 32 bit ARM720-TDMI processor cores;
 - A security / communication core (MP1);
 - An application / communication core (MP2).
- 32 MB RAM memory;
- 32 MB NAND Flash memory;
- Real-time clock (RTC);
- Hardware DES / 3-DES encryption device;
- Hardware RSA accelerator;
- Hardware Pseudo Random Generator (PRG);
- Printer driver;
- Linux operating system, etcetera.

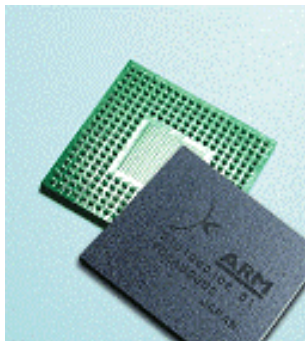


Figure 14 – Banksys designed "System-on-Chip"

Power supply

Lithium-Ion battery

XENTISSIMO is equipped with an intelligent, customer replaceable and rechargeable high-energy Lithium-Ion battery with a capacity of 1.800 mAh at a nominal voltage of 3,7 VDC. To provide an accurate battery status to the user, the battery management system features a fuel gauge.

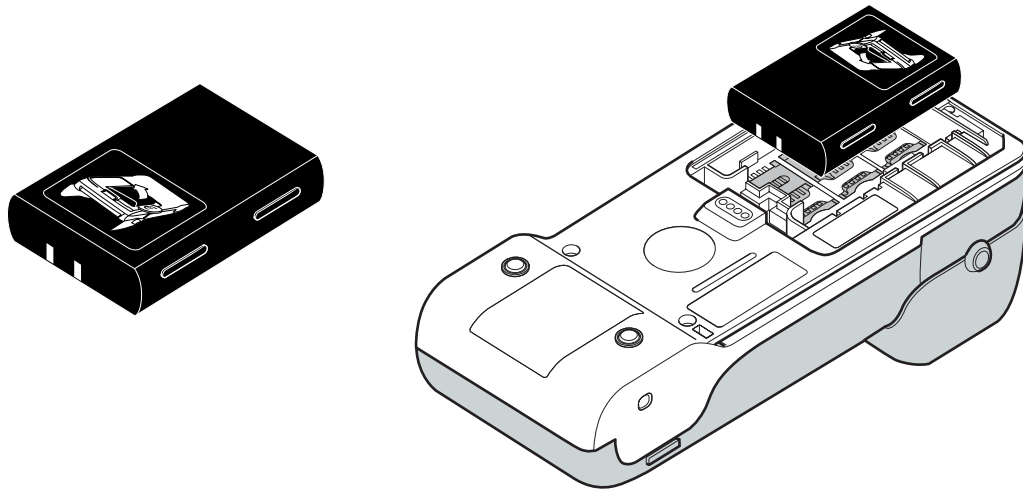


Figure 15 – Lithium-Ion battery

To have XENTISSIMO ready whenever needed, power-management is crucial at every implementation level. Tests revealed that putting the intensity of the display backlight at 50% for half the transaction time, offers a 20% extra operational time as compared to having the intensity at 100% during the whole transaction. Currently, we guarantee XENTISSIMO to work for 300 transactions a day and one ticket printed per transaction. Over a period of 4 days, an average of 50 transactions a day is ensured. In stand-by mode (GSM/GPRS active), guaranteed uptime is at least 7 days.

The battery can be charged either by connecting the power adapter to the XENTISSIMO or by placing the XENTISSIMO on its cradle (for in-door or in-car use). A separate battery charger is not available for this type of battery. As Lithium-Ion batteries do not suffer from the “memory effect”, it is no problem to have them charged all the time. Recharging an empty battery takes about 2,5 hours.

Tip: For the XENTISSIMO to work, the battery *must* be in place (even when the terminal is connected to the power adapter).

It's normal for a Li-Ion battery to reach the end of its life after 3 years (counting from production on). Hence, during the XENTISSIMO lifetime, the battery needs replacing at least once. The set-up of the logistic chain should guarantee a FIFO-based flow of the batteries, which are supplied in the terminal box and as spare parts.

When not yet delivered to a customer, XENTISSIMO terminals need to be held in stock with the battery separate from the terminal, not to reduce the battery lifetime. Li-Ion batteries do discharge inside the terminal, even when it has been switched OFF.

The reasons why Banksys choose for a Lithium-Ion battery:

- No “memory effect”;
- At least 30% more capacity than their NiMH counterparts;
- Weighs at least 30% less;
- Long life cycle;
- Excellent discharge performance;
- More environmental friendly.

Mains power adapter

In all European countries, except from the United Kingdom and Ireland, XENTISSIMO comes with a small wall-mount adapter (for indoor use) having an input of 220 – 240 VAC, 50 Hz and a Euro plug.

Outside Europe, XENTISSIMO comes with a universal tabletop adapter (for indoor use) in combination with different country-specific adapter cables. The adapter input is 100 – 240 VAC, 50 – 60 Hz. The adapter cables have a standard length of 2 m.

In both cases the adapter output is 6 VDC and 1,8 A. The attached cable has a standard length of 2 m and fits to the power connector on the side of the terminal. This way XENTISSIMO battery is charged, to have the terminal always operational.

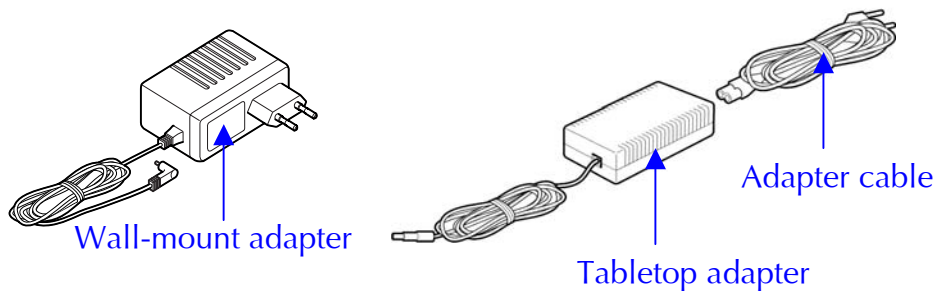


Figure 16 – Power adapter

Appearance

XENTISSIMO has a two-colour housing: a dark grey top and PIN privacy shield (colour code ncs s6000-n) and a light grey bottom (colour code ncs s5020-b). The darker parts are the ones mainly touched by the customers. The colours are identical to those of our XENTA countertop terminal.

The manufacturing process of the display window uses an IMD-technique to have the aluminium-look and the terminal name “XENTISSIMO” printed on the inner side.

A Banksys logo is present on the printer cover (engraved in the tooling).

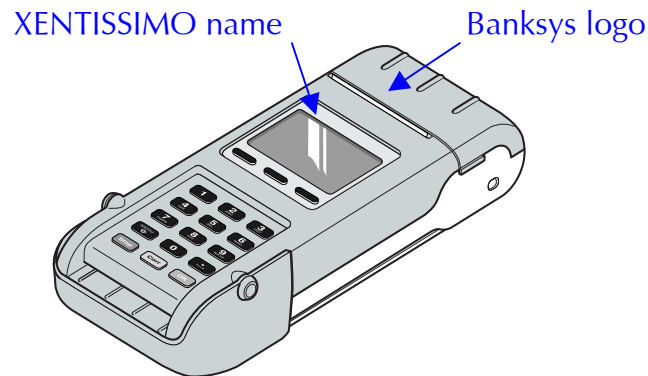


Figure 17 – Appearance

Environmental conditions

The following conditions are valid for the XENTISSIMO terminal:

- Operating temperature: -10 °C to + 50 °C
- Operating relative humidity: 20 % to 95 %, non-condensing

Carried around most of the time, XENTISSIMO has been designed to withstand drops from a height of 1,20 m on concrete.

Furthermore, XENTISSIMO is RoHS compliant (European directive 2002/95/EC). RoHS means Restriction of Hazardous Substances and wants to reduce harmful substances such as lead, mercury and cadmium at the source.

XENTISSIMO is WEEE compliant (European directive 2002/96/EC). WEEE encourages the collection, treatment, recycling and recovery of waste electrical and electronic equipment. The XENTISSIMO terminal and battery are labelled with the WEEE-logo (crossed-out wheeled bin).



Approvals

The XENTISSIMO terminal is subject to approvals and certifications based on the following standards:

- EMV 4.1 Level 1 for all chip-card interfaces
- EMV 4.1 Level 2 approved Kernel for payment application development
- PCI PED
- ZKA
- TNO and T-Systems security evaluation
- CE, according to ITE equipment
- Metlab, according to IEC 950 standard (upcoming)
- EMC specification: EN 55022 / CISPR 22, EN 50082-1, EN 61000-3-2 and 3, FCC Part 15 and other country-specific certifications

Good to know

To save energy, XENTISSIMO automatically comes into a sleep mode after finalizing e.g. the transaction. In this condition certain processes still remain active (for example the GSM/GPRS). When pressing the yellow “on”-button it takes only a second to resume.

To reset the XENTISSIMO, press the yellow “Corr” button for at least 5 seconds and wait for the terminal to reboot.

To power down the XENTISSIMO, press the red “Stop” button for at least 5 seconds. In this mode the battery consumes almost no energy. To wake up the terminal, press the yellow “On” button. It will take much longer for the terminal to be operational compared to when the terminal was just in its sleep mode. This function is useful when, for example, entering health care facilities or when boarding an aircraft.

To power off the XENTISSIMO completely, you have to remove the Lithium-Ion battery. To wake up the terminal, insert the battery and press the yellow “On” button. It will take about 30 s for the terminal to be operational again. This function is useful when, for example, you will not be using XENTISSIMO for more than a week.

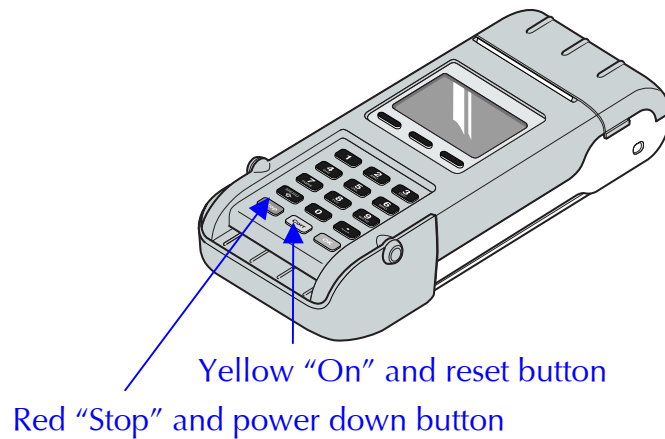


Figure 18 – Reset and power down buttons

XENTISSIMO is equipped with an audio-speaker for audible feedback to the user. It is to generate monotone "buzzer-sounds", but music and voice output are possible as well. The latter, however, needs low-level support, which is available upon customer request.

XENTISSIMO

PRODUCT MANUAL

Security

The “System-on-Chip”

The high security level of the ASIC is achieved via:

- Tamper circuits with multiple tamper sources,
- 32 Kbytes of integrated secure memory, instantaneously erased in case of a tamper attack;
- Additional 256-bit security registers, used, for example, for master key storage. The registers are also erased instantaneously in case of tamper attack;
- Severe control of the secured boot process of the terminal (via key management). No code can run on the security processor unless it is certified and signed by a certification authority.

Terminal design

The most tangible security feature is the integrated PIN privacy shield, which protects a cardholder against shoulder surfing while entering a PIN.

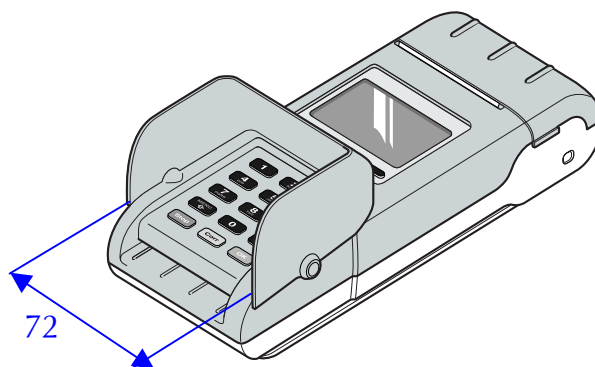


Figure 19 – Integrated revolving PIN privacy shield

But in the terminal design, security measures are taken at different levels:

- The very architecture of the ASIC and the security-related components;
- Blocked access to the chip-card Interface in case of fraudulent intentions;

- Multiple mechanisms for detection of intrusion attempts, triggering erasure of the secure memory.

Security software

The software supports the following key management schemes:

- DUKPT, Derived Unique Key Per Transaction, uses a working key that is changed with each transaction;
- Master / session, requires that the PIN encryption key or working key remains the same for an entire transaction session. The session could be a day, a week, a month or any other period of time set by the host computer.

Other schemes can be added.

XENTISSIMO supports the SSL (Secure Socket Layer) protocol, which is mainly used to securely send and receive information over unsecured networks like the Internet, using different communication media such as wireless LAN and GPRS.

Standards

The security-related functions comply with the following standards:

- ISO 13491 (secure cryptographic device concepts);
- ISO 9564 (PIN management and security);
- ISO 15668 (secure file transfer – retail).

Accessories

The XENTISSIMO terminal has several accessories.

Belt clip and fixation points

XENTISSIMO is designed to be the ideal travel mate.

With every XENTISSIMO terminal a belt clip is supplied for comfortably carrying the terminal on your belt.

The belt clip can simply be screwed onto the terminal (via the printer compartment).

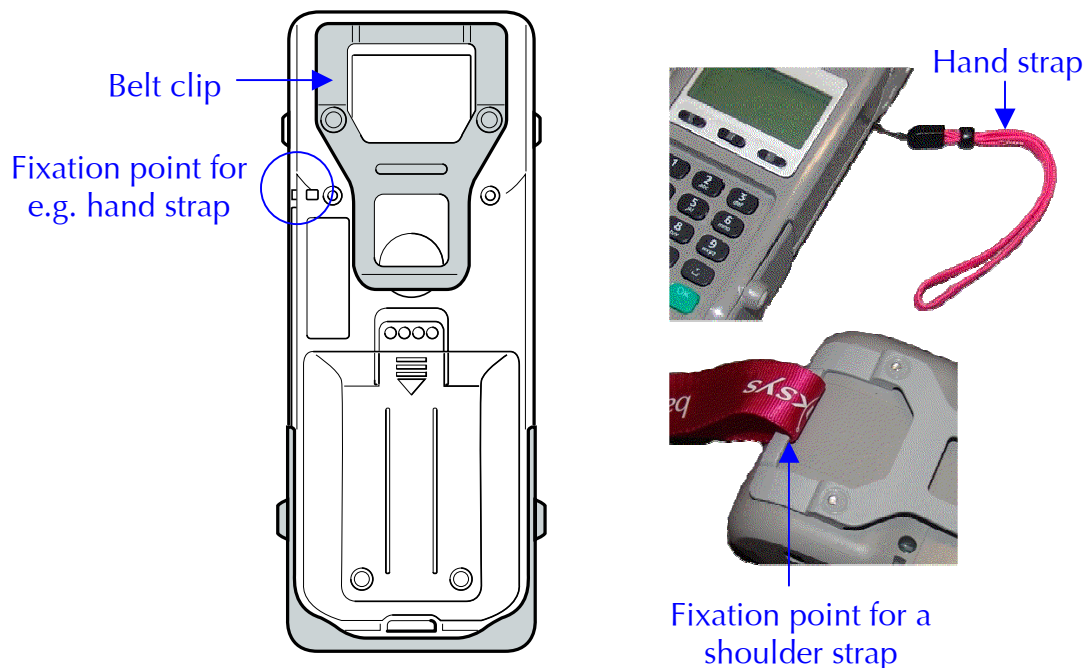


Figure 20 – Belt clip and fixation points

The XENTISSIMO belt clip is available in light grey colour (colour code ncs s5020-b).

The belt clip itself has a fixation point to attach a shoulder strap.

At the XENTISSIMO rear side, a fixation point is foreseen for attaching a hand strap, anti-theft cable, etcetera.

Cradle

To put the terminal aside temporarily or charge the battery, a cradle is available. The cradle can be used in-door on a countertop or wall mount, but it also suits cars, taxis or trucks. The cradle can be attached via screws or for horizontal positions via a dual lock mechanism (a kind of rugged Velcro tape). Simply hook XENTISSIMO onto the cradle and push it down to secure it. To release XENTISSIMO, press the two laterally placed eject-buttons. A terminal drop protection is standard supplied and can easily be screwed onto the cradle.

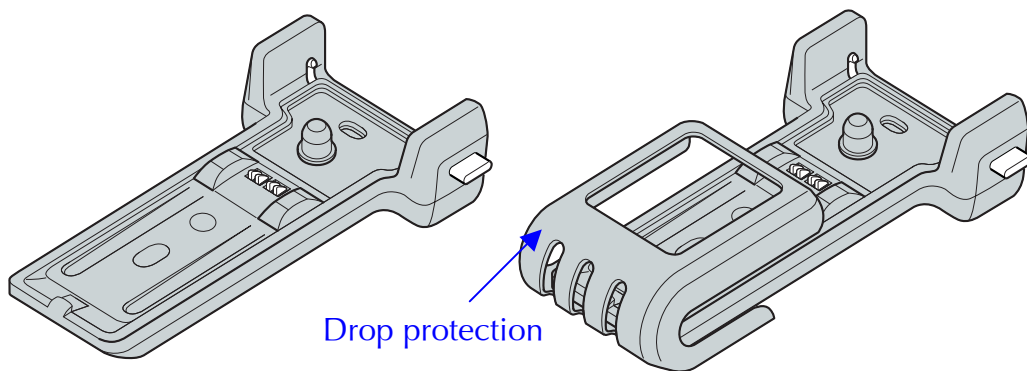


Figure 21 – Cradle

When used in-door, the XENTISSIMO mains power adapter is connected to the cradle. The cradle passes the current onto the XENTISSIMO terminal for battery charging.

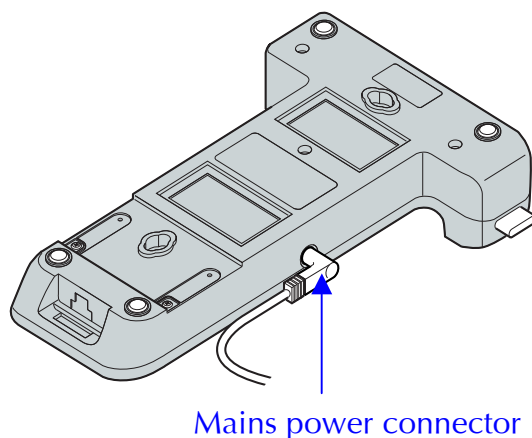


Figure 22 – Cradle powered in-door

In a car, a power cable for direct wiring or with cigarette lighter plug is connected to the cradle. The cradle transforms the 12 VDC car voltage or 24 VDC truck voltage to the 6 VDC needed to charge the battery in the XENTISSIMO terminal. The car power cable for direct wiring has a length of 2 m. The one with cigarette lighter plug has a length of 0,60 m extendable to 2,35 m. Banksys can supply these cables.

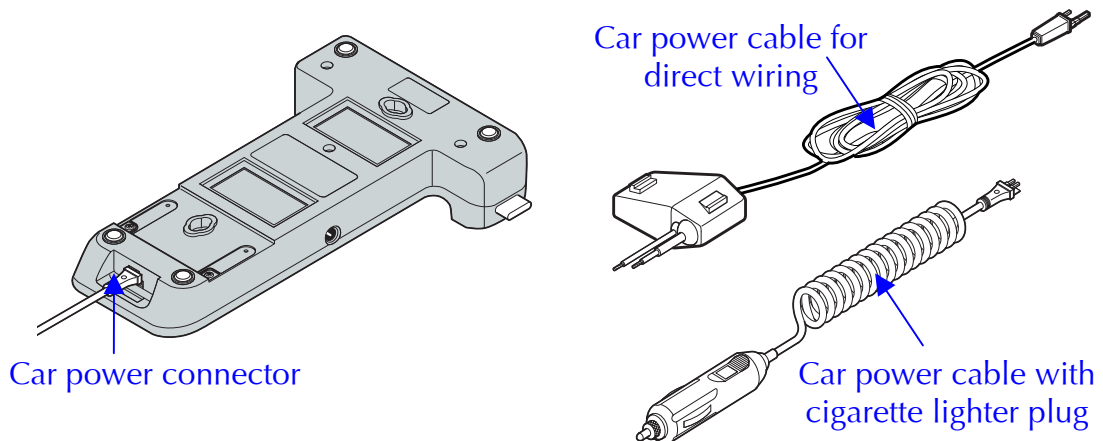


Figure 23 – Cradle powered in-car

The XENTISSIMO cradle has the following dimensions and weight:

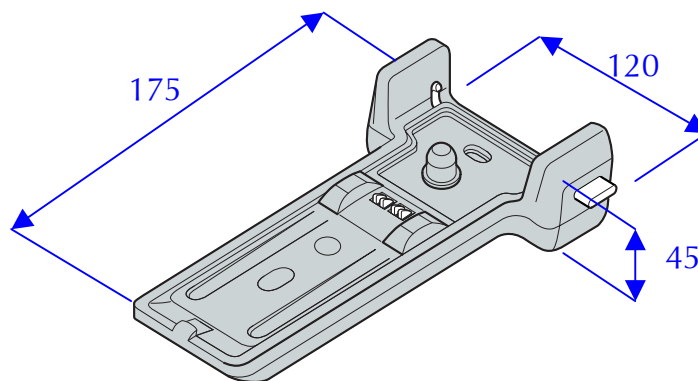


Figure 24 – Cradle dimensions

- 175 x 120 x 45 mm (l x w x h);
- With drop protection mounted 180 x 120 x 70 mm (l x w x h);
- The cradle weighs 120 g;
- And with drop protection mounted 145 g.

The XENTISSIMO cradle, with Banksys logo engraved in the tooling, is available in dark grey (colour code ncs s6000-n). The drop protection has the same colour.

XENTISSIMO

PRODUCT MANUAL

Product identification

XENTISSIMO terminal

The XENTISSIMO rating plate contains following information:

- The company name: Banksys;
- The model name: XENTISSIMO terminal;
- The article number referring to the specific terminal hardware:
 - Readable e.g. 9066000001 for a non-customized terminal equipped with wLAN and GSM/GPRS interfaces, or 9066000002 for a non-customized terminal equipped with wLAN interface only;
 - Present in barcode (code128a);

Tips:

- This article number will differ when choosing a customized keypad layout, a customized colour, etcetera;
- This article number is used for certification purposes;
- This article number is different from the commercial article number mentioned on the packaging box. That one also includes software configuration, accessories, documentation, packaging etcetera.

-
- The serial number:
 - Readable e.g. S/N: AGW3571;
 - Present in barcode (code128a);
 - The production date: yywk, so 0603 for week 03 in 2006;
 - The supplier code: e.g. 1859 (this code will be eliminated in the future);
 - “Deposited design”
 - Country of origin: Made in Belgium;
 - Voltage and current: 6,0 VDC 1,8 A
 - The WEEE-logo: the crossed-out wheeled bin;
 - Safety labels: e.g. CE, Metlab.

The second label contains following info:

- The MAC address, a unique number attached typically to networking equipment. It's displayed in six groups of two hexadecimal digits “FF FF FF FF FF FF” e.g. 00 08 19 01 80 15. This number can be consulted via software;

- Present in barcode (code128a);
- Readable e.g. 000819018015;
- The hardware version number, this number will be upgraded for tracking of certain hardware changes e.g. BP001 (BP is the supplier code);
- Present in barcode (code128a);
- Readable e.g. BP001.

XENTISSIMO cradle

The cradle rating plate contains following information:

- The company name: Banksys;
- The model name: XENTISSIMO cradle;
- The article number referring to the specific cradle hardware:
 - Readable e.g. 3032620001, for a non-customized cradle;
 - Present in barcode (code128a);

Tips:

- This article number will differ when choosing e.g. a customized colour;
- This article number is different from the commercial article number mentioned on the packaging box. That one also includes accessories, documentation, packaging etcetera.

-
- The serial number:
 - Readable e.g. S/N: AGW9153;
 - Present in barcode (code128a);
 - The production date: yywk, so 0611 for week 11 in 2006;
 - The supplier code: e.g. 1859 (this code will be eliminated in the future);
 - Country of origin: Made in Belgium;
 - Voltage and current: 6,0 VDC 1,8 A
 - The WEEE-logo: the crossed-out wheeled bin;
 - Safety labels: e.g. CE, Metlab.

The second label contains the hardware version number; this number will be upgraded for tracking of certain hardware changes e.g. BP001 (BP is the supplier code);

- Present in barcode (code128a);
- Readable e.g. BP001.

Terminal package box

The terminal package box label contains following information:

- The commercial name: e.g. XENTISSIMO AA for a XENTISSIMO with wireless LAN interface only for customer "AA" or XENTISSIMO GSM/GPRS AA for a XENTISSIMO with wireless LAN and GSM/GPRS interface for customer "AA";
- The commercial article number referring to the complete configuration. This is a customer-specific number;
 - Present in barcode (code128a);
 - Readable e.g. Art Nr: 69001*1;
- The terminal production date: Wk: yywk, so 0603 for week 03 in 2006;
- The supplier code: e.g. 1859 (this code will be eliminated in the future);
- The software loaded by Banksys on the terminal e.g. SW: xx.xx.xx, SW: none means that the terminal contains the generic platform;
- The terminal serial number:
 - Readable e.g. S/N: AGW3571;
 - Present in barcode (code128a);
- The terminal MAC address;
 - Present in barcode (code128a);
 - Readable e.g. 000819018015;
- The terminal hardware version number;
 - Present in barcode (code128a);
 - Readable e.g. BP001.
- Safety labels: e.g. CE, Metlab;

Tips:

- The commercial name and the commercial article number should also appear on your orders and invoices;
 - The production date, supplier code, serial number, MAC address, hardware version number and safety labels are identical to the info added on the terminal itself.
-

Cradle package box

The cradle package box label contains following information:

- The commercial name: e.g. XENTISSIMO cradle;

- The commercial article number referring to the complete configuration. This might be a customer-specific number;
 - Present in barcode (code128a);
 - Readable e.g. Art Nr: 71001*1;
- The cradle production date: Wk: yywk, so 0611 for week 11 in 2006;
- The supplier code: e.g. 1859 (this code will be eliminated in the future);
- Since no software is loaded in the cradle, SW: none is marked;
- The cradle serial number:
 - Readable e.g. S/N: AGW9153;
 - Present in barcode (code128a);
- The cradle hardware version number;
 - Present in barcode (code128a);
 - Readable e.g. BP001.
- Safety labels: e.g. CE, Metlab;

Tips:

- The commercial name and the commercial article number should also appear on your orders and invoices;
 - The production date, supplier code, serial number, hardware version number and safety labels are identical to the info added on the cradle itself.
-

Product package

XENTISSIMO terminal

The individual package is designed to contain the XENTISSIMO terminal; the mains power adapter, the battery, the belt clip and a documentation set. Small accessories like a shoulder strap, a hand strap, etcetera can be added at the distributor's site.

The package is designed to be as small as possible and the concept allows for easy verifying that all components are present.

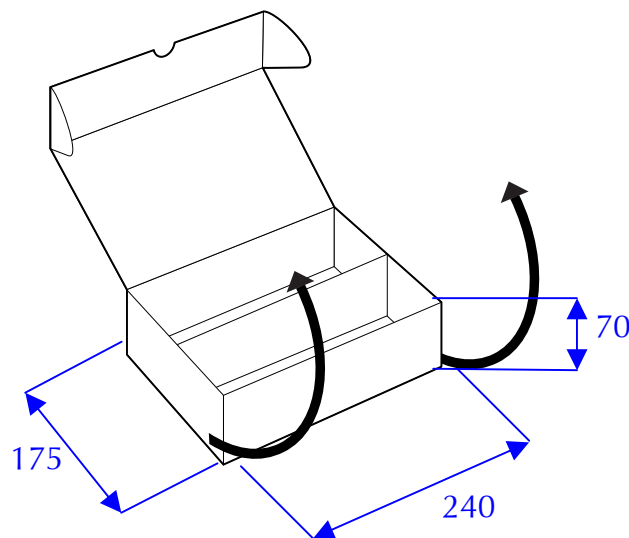


Figure 25 – Terminal package box

Terminal package box dimensions: 175 x 240 x 70 mm (w x l x h)

Banksys warehouse restricts the pallet pile-up height to 1.800 mm. This means that:

- 438 terminals are loaded on a Euro pallet (23 layers of which 12 layers with 20 boxes and 11 layers with 18 boxes);
- Pallet and boxes occupy a volume of 800 x 1.200 x 1.760 mm (w x l x h)
- Pallet and boxes weigh approximately 360 kg.

For air shipments the pallet pile-up height is restricted to 1.600 mm. This means that:

- 380 terminals are loaded on a Euro pallet (20 layers of which 10 layers with 20 boxes and 10 layers with 18 boxes);
- Pallet and boxes occupy a volume of 800 x 1.200 x 1.550 mm (w x l x h)
- Pallet and boxes weigh approximately 310 kg.

The following storage conditions are valid:

- Storage temperature: -25 °C to + 70 °C;
- And storage Relative Humidity: 5 % to 95 %, non-condensing.

XENTISSIMO cradle

The individual package is designed to contain the XENTISSIMO cradle, the drop protection and a documentation set. Possible accessories like a car power cable can be added at the distributor's site. This package has the same footprint as the terminal package.

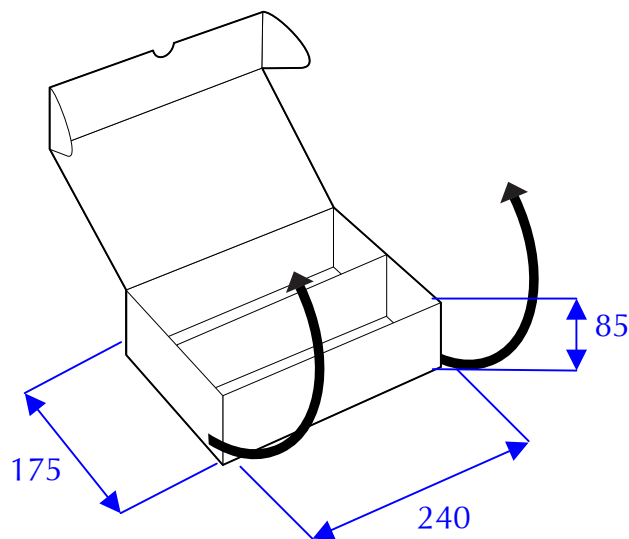


Figure 26 – Cradle package box

Cradle package box dimensions: 175 x 240 x 85 mm (w x l x h)

Banksys warehouse restricts the pallet pile-up height to 1.800 mm. This means that:

- 362 cradles are loaded on a Euro pallet (19 layers of which 10 layers with 20 boxes and 9 layers with 18 boxes);
- Pallet and boxes occupy a volume of 800 x 1.200 x 1.765 mm (w x l x h)
- Pallet and boxes weigh approximately 160 kg.

For air shipments the pallet pile-up height is restricted to 1.600 mm. This means that:

- 324 cradles are loaded on a Euro pallet (17 layers of which 9 layers with 20 boxes and 8 layers with 18 boxes);
- Pallet and boxes occupy a volume of 800 x 1.200 x 1.595 mm (w x l x h)
- Pallet and boxes weigh approximately 145 kg.

The following storage conditions are valid:

- Storage temperature: -25 °C to + 70 °C;
- And storage Relative Humidity: 5 % to 95 %, non-condensing.

Bulk packages

XENTISSIMO terminal

The terminal bulk package is designed to contain 22 XENTISSIMO terminals. The terminals are positioned on their sides with the mains power jack facing upwards.

Tip: The bulk packing contains terminals ONLY. All other items like the mains power adapter, the battery and the belt clip should be ordered separately. Please refer to below list of spare parts.

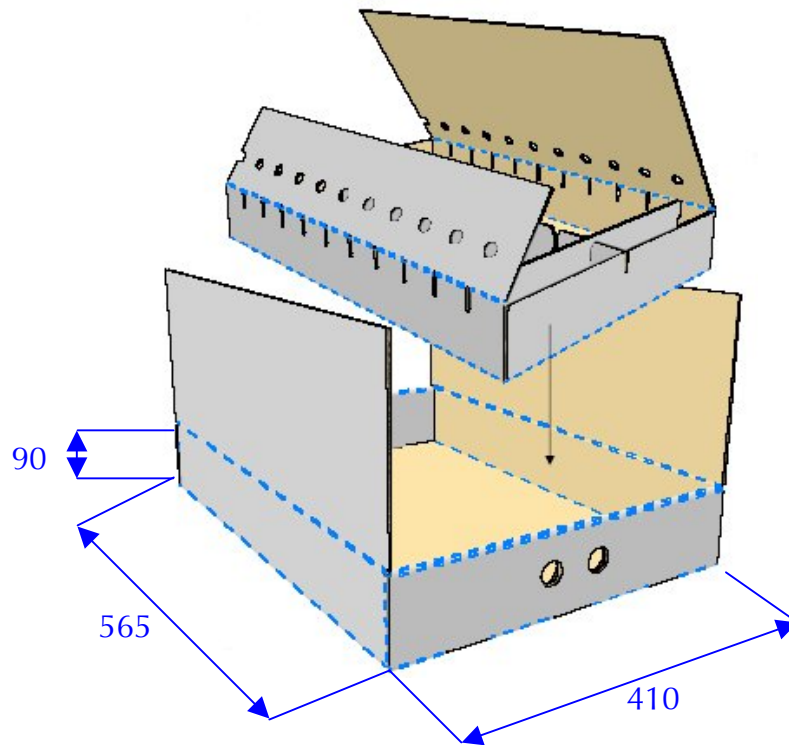


Figure 27 – Terminal bulk package box

Terminal bulk package box dimensions: 410 x 565 x 90 mm (w x l x h)

Banksys warehouse restricts the pallet pile-up height to 1.800 mm. This means that:

- 1.584 terminals are loaded on a Euro pallet (18 layers of 4 boxes);
- Pallet and boxes occupy a volume of 800 x 1.200 x 1.770 mm (w x l x h)
- Pallet and boxes weigh approximately 710 kg.

For air shipments the pallet pile-up height is restricted to 1.600 mm. This means that:

- 1.408 terminals are loaded on a Euro pallet (16 layers of 4 boxes);
- Pallet and boxes occupy a volume of 800 x 1.200 x 1.590 mm (w x l x h)
- Pallet and boxes weigh approximately 670 kg.

The following storage conditions are valid:

- Storage temperature: -25 °C to + 70 °C;
- And storage Relative Humidity: 5 % to 95 %, non-condensing.

Spare parts

The bulk package contains individually packed items. These items cannot be ordered individually.

Below is a (non-exhaustive) list of items delivered in a bulk package:

- XENTISSIMO battery
 - 20 batteries in a box

Caution: Due to the limited lifetime of the Lithium-Ion battery, FIFO (First In First Out) should be guaranteed in all warehouses from the production site until final customer delivery.

- Car power cable for direct wiring
 - 10 cables in a box
- Car power cable with cigarette lighter plug
 - 10 cables in a box
- XENTISSIMO 230V power adapter
 - 132 adapters in a box
- XENTISSIMO belt clip (rubber feet mounted)
 - 1.000 belt clips in a box
- XENTISSIMO cradle drop protection
 - 216 drop protections in a box
- Pozidriv screw for XENTISSIMO belt clip and cradle drop protection
 - 2 screws in a small plastic bag
- XENTISSIMO package box (cardboard)
 - 500 cardboards on a pallet
- XENTISSIMO Banksys paper
 - 20 paper rolls in a box

The environmental conditions are identical to the ones described in the product package of the terminal.

XENTISSIMO

PRODUCT MANUAL

Development environment

XENTISSIMO comes with a professional, full-featured Linux-based application development environment supporting common programming languages such as native C and Java. The development environment contains following components:

- Two development frameworks;
 - The backward-compatibility environment (SBCE), for customers who want to move existing C-ZAM/SMASH applications onto the XENTISSIMO terminal;
 - The powerful Model for Application Programming on SAMOA (MAPS), allowing customers to develop new applications that exploit the full functionality of XENTISSIMO. Please note that SAMOA is the name of the “System-on-Chip” and of the complete development environment.
- A tool chain to develop applications in both development environments in native C or Java on a PC running Debian GNU/Linux (Release 3.0) as an operating system;
- Comprehensive documentation:
 - A description of the Application Programming Interfaces (API) for C and Java, for MAPS and SBCE;
 - A description of the SAMOA hardware, software and security architecture;
 - SAMOA User-Interface-design guidelines;
 - Application development and porting guidelines.

XENTISSIMO

PRODUCT MANUAL



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