

XENTA

Product manual



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Product Manual XENTA

Version 2.0

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Introduction

Banksys' XENTA is a **countertop** payment terminal designed to run a virtually unlimited number of applications in attended environments.

It can process a wide range of magnetic stripe and chip cards for payment and non-payment applications.

The newly designed "System-on-Chip", hosting a full-featured Linux operating System, powers the XENTA terminal. Faithful to its role as a technological innovator, Banksys has developed a terminal that offers the performance and the security level it is renowned for.

While high-tech on the inside, the terminal illustrates Banksys' continuous concern for efficiency towards its users: easy-to-install, easy-to-use, easy-to-maintain.

The user-centred approach makes the new terminal stand out both ergonomically and aesthetically. Undoubtedly striking are the design of the terminal itself, its uncomplicated keypad and its prominent display.



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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
ANSI	American National Standards Institute
ASIC	Application Specific Integrated Circuit
BGA	Ball Grid Array
bps	Bits per second
BRA	Basic Rate Access
CA	Certification Authority
CSM	Chip Security Module
CE	European safety mark (Conformité Européenne)
CTAP	Common Terminal Acquirer Protocol
DES	Data Encryption Standard
dpi	Dots per inch
DUKPT	Derived Unique Key Per Transaction
EAS	Electronic Article Surveillance
EBS	European Banking Standard
EC	European Commission
ECR	Electronic Cash Register
EMC	Electromagnetic Compatibility
EMV	Europay, MasterCard, VISA standard
FCC	Federal Communications Commission
GHz	Gigahertz

GPRS	Global Packet Radio Services
GSM	Global System for Mobile communication
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
ISDN	Integrated Services Digital Network
ISO	International Organisation for Standardisation
ITE	Information Technology Equipment
ITU	International Telecommunication Union
LAN	Local Area Network
LCD	Liquid Crystal Display
MAC	Media Access Control (address)
mAh	Milli ampere-hour
MAPS	Model for Application Programming on SAMOA
MB	Megabyte
Mb	Megabit
Mbps	Megabits per second
MET	Safety mark from MET laboratories Inc.
MHz	Megahertz
MK/SK	Master key/Session key
MNP	Microcom Networking Protocol
NCITS	National Committee for Information Technology Standards
PC	Personal Computer
PCI	Payment Card Industry
PED	PIN Entry Device
PIN	Personal Identification Number
PPP	Point-to-Point Protocol
PSAM	Purchase Secure Application Module
PSTN	Public Switched Telephone Network

RAM	Random Access Memory
ROM	Read Only Memory
RoHS	Restriction on the use of Hazardous Substances
RSA	Rivest, Shamir, Adleman encryption
RTL	Remote Terminal Load
SAM	Secured Application Module
SBCE	C-ZAM/SMASH backward-compatibility environment
SIM	Subscriber Identity Module
SMS	Short Message Service
SSL	Secure Socket Layer
TCP/IP	Transmission Control Protocol – Internet Protocol
TDMI	Thumb Instruction, Debugger, Multiplier, ICE (ARM CPU features)
TQM	Terminal Quality Management
USB	Universal Serial Bus
UTP	Unshielded Twisted Pair
VAC	Volts of alternating current
VDC	Volts of 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 meaning Central Credit Committee

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General description

A terminal for the present and the future

The XENTA is highly suited for multiple applications in attended environments. It accepts a wide range of payment cards including credit cards, debit cards, stored-value cards (e-purse), loyalty cards, private label cards, social security cards, etcetera.

A terminal for all

Its modern, cubic design positions the terminal clearly as a standalone countertop model, emphasising the general concept of simplicity. Apart from that, the basic geometric design should allow for easy integration in a variety of environments, aesthetically as well as ergonomically.

Both the hardware and software of the XENTA terminal have been designed with the end-user in mind. Special consideration has been given to the guidelines of the American Disability Act (ADA) and other organisations to support terminal accessibility for everyone. Most of these considerations can be consulted in the SAMOA User-Interface-design guidelines.

Architecture

The engine of the new generation of Banksys electronic payment terminals resides in a newly designed "System-on-Chip" architecture.

In addition to a brand-new ASIC, this architecture includes all hardware and software components necessary for the implementation of security and payment applications, the control of printer and communication devices, user interfaces, magnetic-stripe reader, chip-card interface and peripheral equipment.

It also comprises a well-established, full-featured and powerful development environment that runs on a standard Linux PC and that supports the common programming languages C and Java.

State of the art security technology

In true Banksys tradition, the XENTA is once again at the leading edge of security technology. Security measures were taken in the ASIC, in the physical design of

the terminal and in the software; in order to keep sensitive information encrypted and to instantaneously erase data should tampering be detected.

All cryptographic algorithms commonly available are supported.

The most tangible security feature of XENTA is the integrated privacy shield that protects against shoulder surfing while entering a PIN.

XENTA and its accessories

Since XENTA has all intelligence and security inside the terminal, it is perfectly suited as a standalone device.

Its communication capabilities are very diverse and are implemented in a modular way. It incorporates standard PSTN, Ethernet and serial interfaces.

Connection to numerous peripherals is possible including the merchant unit, Electronic Cash Registers, PCs, barcode readers, cheque readers, biometrics modules, etcetera.

To fit the various needs, the following accessories are available:

- A printer, attached to the rear of the terminal;
- A merchant unit with integrated printer, to facilitate the merchant's operation;
- Additional interface boards, for example ISDN, GSM/GPRS, wireless LAN, etcetera;
- A fixation plate to attach the XENTA terminal, for example, to the counter;
- A swivel to easily turn the terminal towards its user.

Technical specifications

Dimensions and weight

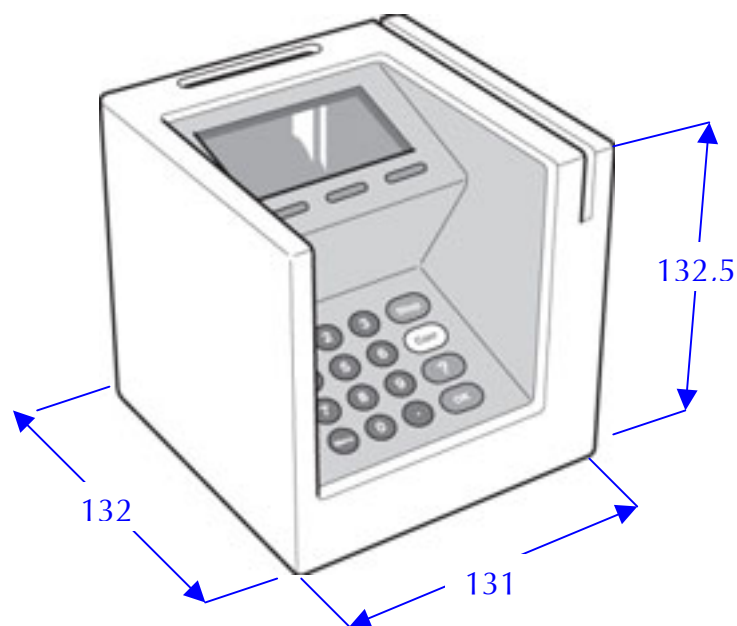


Figure 1 – Terminal dimensions

Dimensions: 131 x 132 x 132,5 mm (w x l x h)

Weight: 740 g

Keypad

Layout

The terminal keypad counts 19 keys.

Figure 2 shows the standard keypad layout. These 19 keys break up into:

- 10 numeric keys;

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

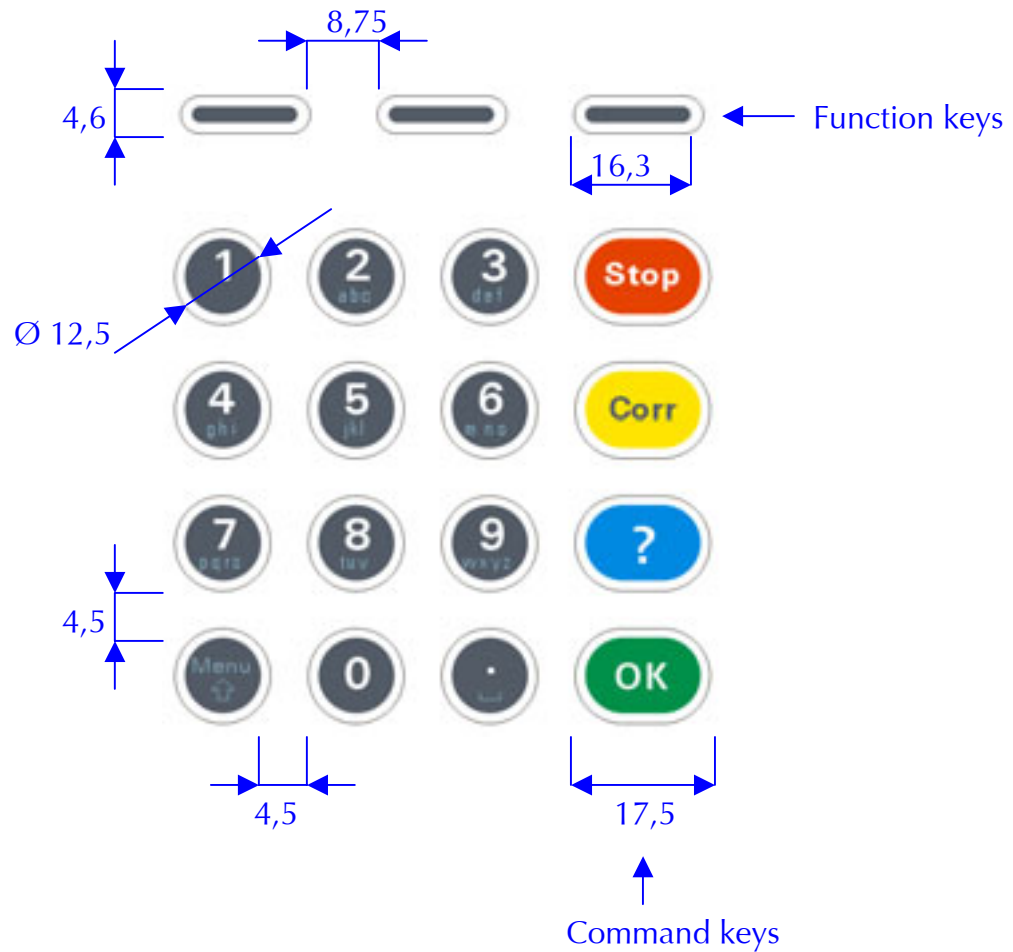


Figure 2 – Keypad

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.

Diverging keypad layouts can be made available upon customer request.

Ergonomics

Aiming at utmost accessibility, Banksys has enhanced the 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;
- Concave key shape;
- Usage of uppercase and lowercase characters to increase readability;
- Key distance, tactile feeling and key main character size according to the ADA regulations;
- Green key backlights to illuminate the main key character, improving the contrast. The backlight intensity is controlled by software;
- Keypad with key caps made of polycarbonate material preventing wear and tear of the key imprint;

Display

Features

XENTA has a monochrome graphical LCD display with:

- A bright green backlight; display backlight intensity and contrast are controlled by software;
- A resolution of 128 x 64 pixels (w x h) and a view area of 72 x 36 mm (w x h);
- A text display area with a height of 6 lines; technically, the use of 8 lines is possible, but is not advisable for legibility reasons;
- A character bitmap size of 6 x 9 pixels (w x h).

Ergonomics

From an ergonomic point of view, the following two features are important:

- Display size and resolution offer a very good readability;

- Readability is best when using a sans-serif font (for example Tiresias or Verdana) and uppercase/lowercase text. Own fonts can be added in software. Following screenshots illustrate some of the possibilities:

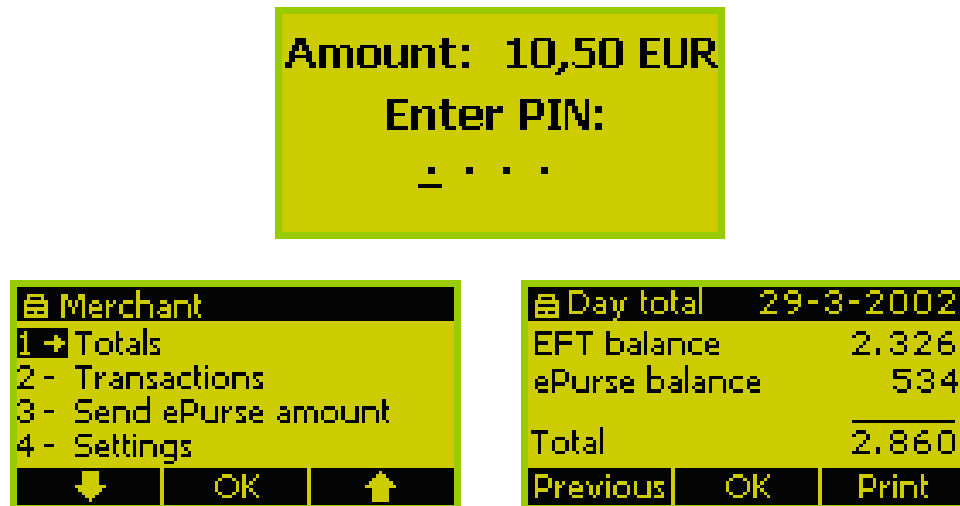


Figure 3 – Display

Card interfaces

The terminal has two card interfaces:

- A chip-card interface conforming to EMV 4.0 level 1;
- And a triple-track magnetic-stripe reader (ISO 1/2/3).

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

- The chip-card interface is located just above the display, bringing it closer to the cardholder. By choosing this prominent position, Banksys has anticipated the increased usage of chip cards;
- The magnetic-stripe reader is located on the right side of the terminal;
- The position of the card slot requires a vertical card handling, which is to be preferred over horizontal card handling as the accessibility is much better for both for the cardholder and the cashier should assistance be required;
- Both card slots are in distinctive positions on the terminal, diminishing the risk of users confusing the two slots;
- The magnetic-card reader has an extended card guidance for optimal reading quality;
- The PIN privacy shield being integrated in the housing of the terminal makes card interfaces easily accessible;

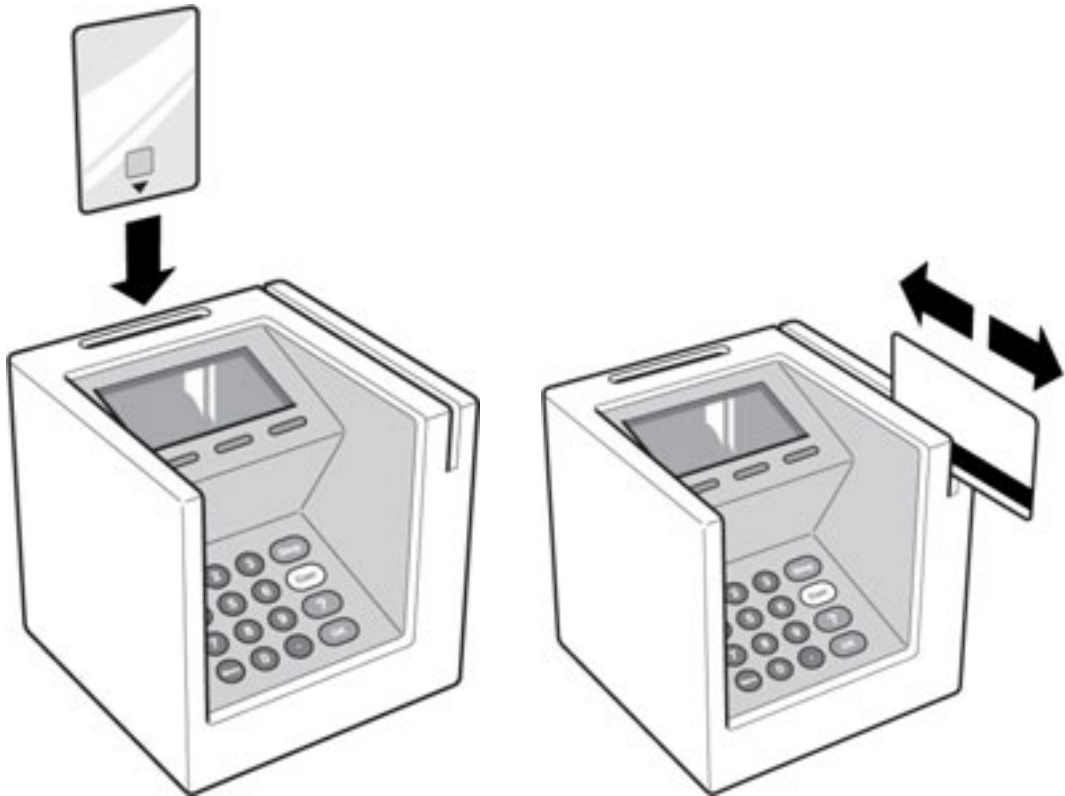


Figure 4 – Card interfaces

Applications, via their user interface can provide the users with even more guidance by means of clear pictograms on the terminal display that explain how to insert a chip card or to swipe a magnetic-stripe card.

The screen shot below shows a sample of such an icon, which can differ depending on the application.

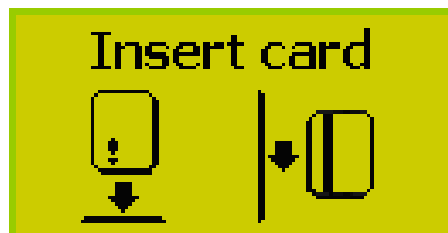


Figure 5 – Display pictograms

PIN privacy shield

To prevent shoulder surfing when a cardholder is entering a PIN code, the XENTA is equipped with a privacy shield, which has smartly been integrated in the design.

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

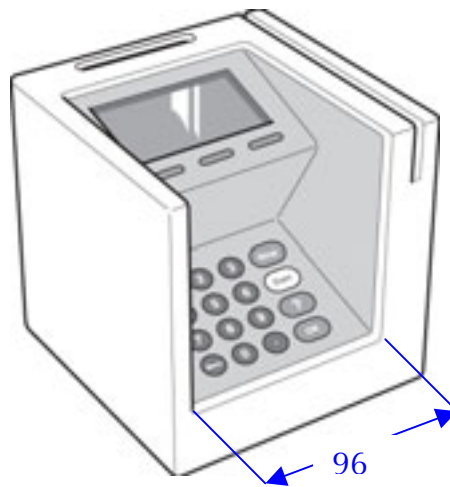




Figure 6 – PIN privacy shield

Wired communication

XENTA is standard equipped with both an Ethernet and a dial-up (PSTN) interface.

Ethernet

XENTA is standard equipped with an interface marked "Ethernet" (, ,).

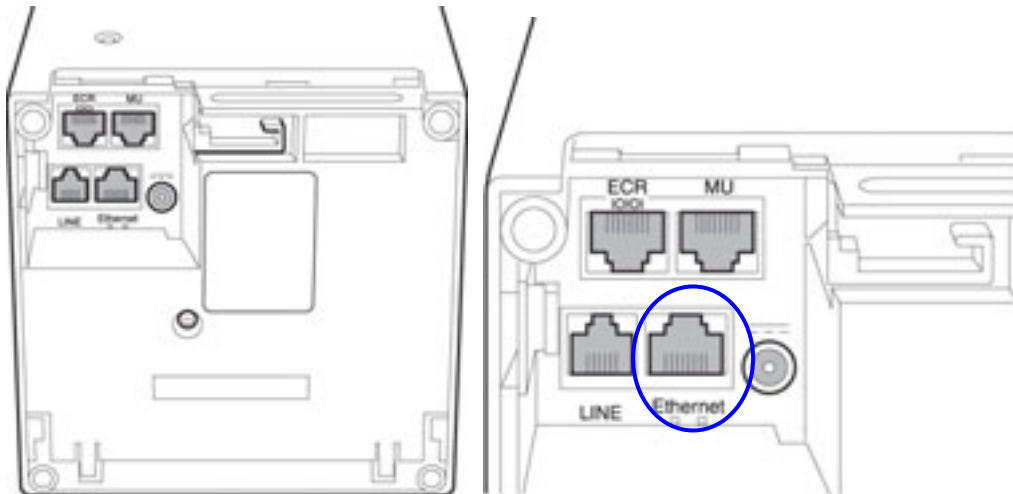


Figure 7 – Ethernet interface

It allows integrating XENTA as a node in a local area network (LAN). Other players can be ticket printers, computers, cash registers, more XENTA terminals etcetera.

Data is transferred to a router. The router regulates the traffic between the devices in the 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.

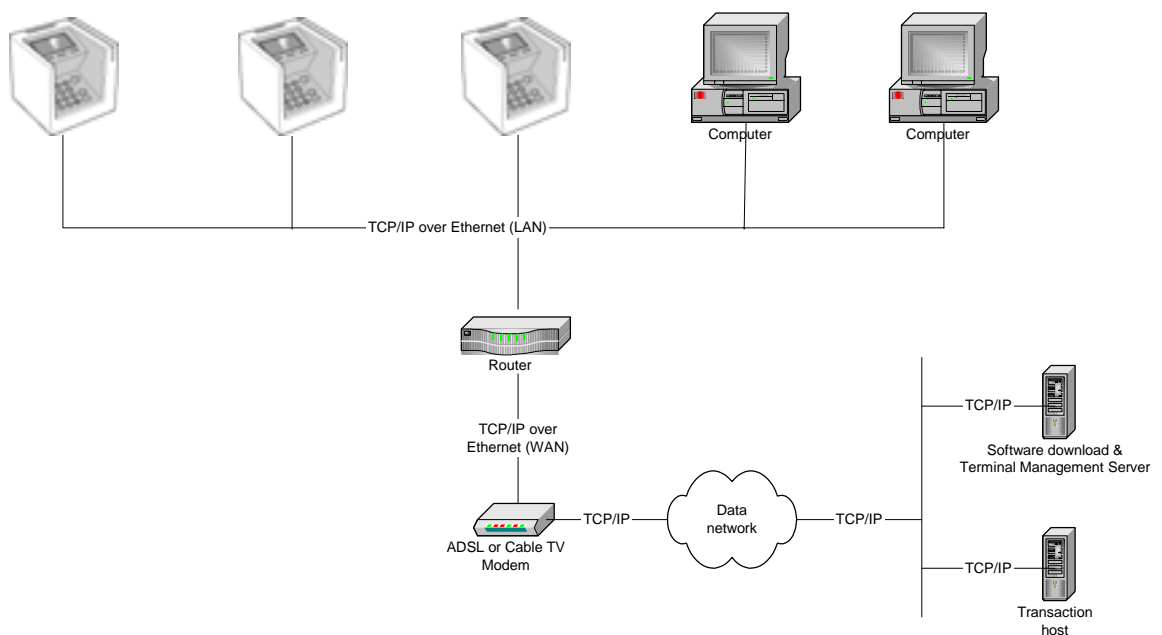


Figure 8 – Ethernet configuration

The XENTA Ethernet interface has the following main specifications:

- According to IEEE 802.3 standard;
- Ethernet encapsulation for IP-protocol, IP address, subnet mask & gateway;
- Communication speed up to 10 Mbps;
- Logic integrated in the high-tech ASIC;
- Fast interface for development purposes and software download;
- 10 Base-T interface, connector type RJ45.

Dial-up

XENTA is standard equipped with a dial-up modem (PSTN) marked "LINE".

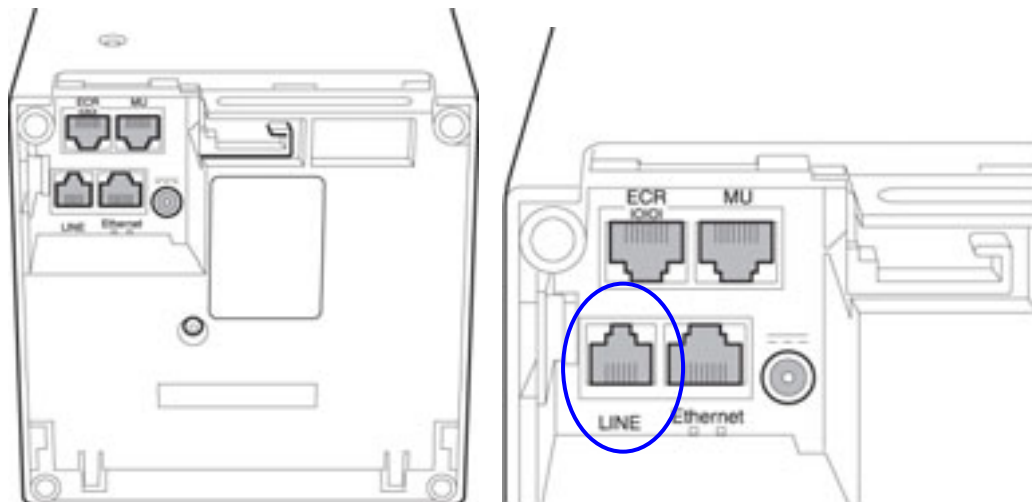


Figure 9 – PSTN interface

The PSTN interface is suited for an analogue telephone connection to the transaction host.

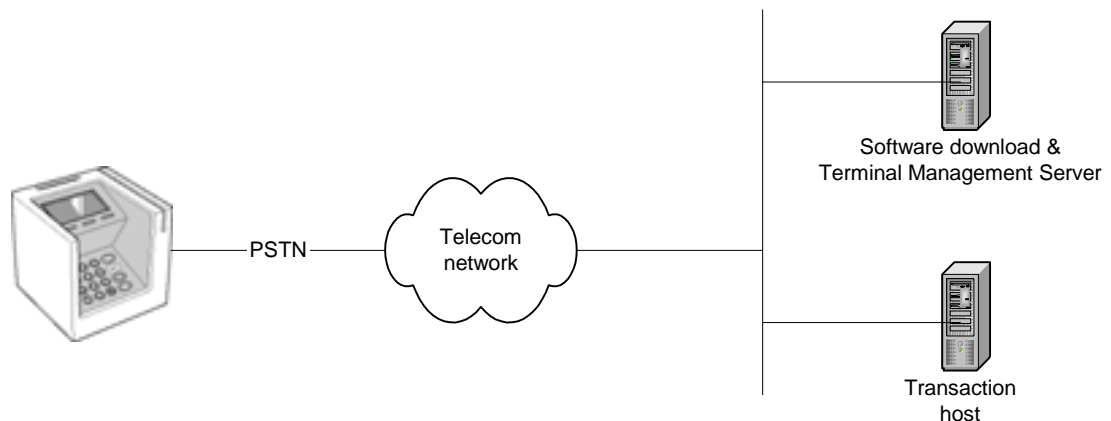


Figure 10 – PSTN configuration

The XENTA PSTN interface has the following main specifications:

- Analogue telephone connection according to TBR21 and FCC part 68;
- Bell 103, Bell 212, V.21, V.22, V.22b, V.23, V.32, V.32b, V.34, V.90, V.92 modem modulation protocols;
- V.42/MNP4 and V.42b/MNP5 error correction and data compression, V.44 data compression;
- Tone and pulse dialling;
- Communication speed up to 57.600 bps, which is beneficial for remote software downloads;
- Connector type RJ11.

Interfaces

By default, the terminal is equipped with one serial RS-232 interface marked “ECR” (OIOI) and one dedicated merchant unit interface marked “MU”.

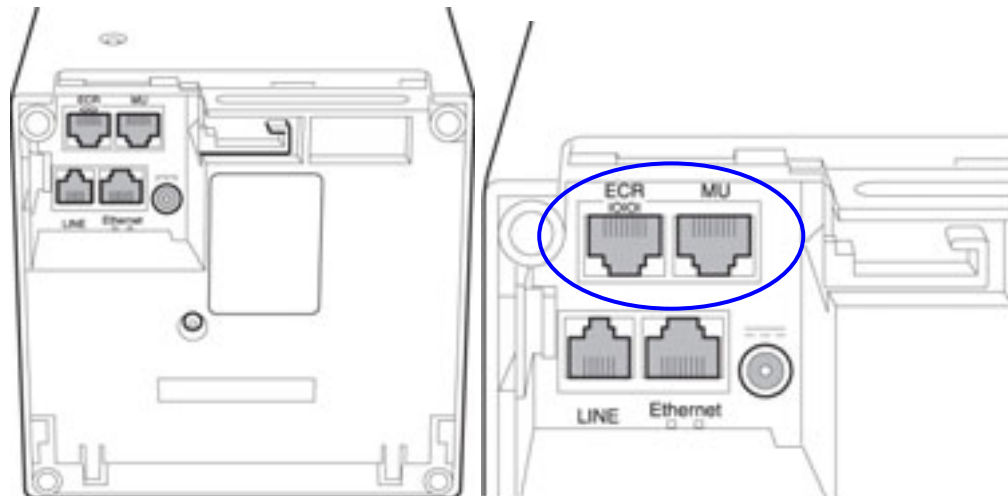


Figure 11 – RS-232 and merchant unit interface

The serial interface, with connector type RJ45, can be used to:

- Connect XENTA to an electronic cash register (ECR), PC, bar code reader, ticket printer, etcetera;
- Perform local key loading.

The merchant unit interface, with a connector of type RJ45, is used specifically for connection to the merchant unit.

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

Chip security modules

XENTA has four chip-card interfaces (type ID0) for chip security modules (CSM, SAM) able to read 3,3 V and 5 V CSMs.

As each pair of slots can support up to 80 mA, per pair only one of the slots can be used as PSAM supporting 50 mA current usage.

To reach the CSM slots you need to open the bottom cover.

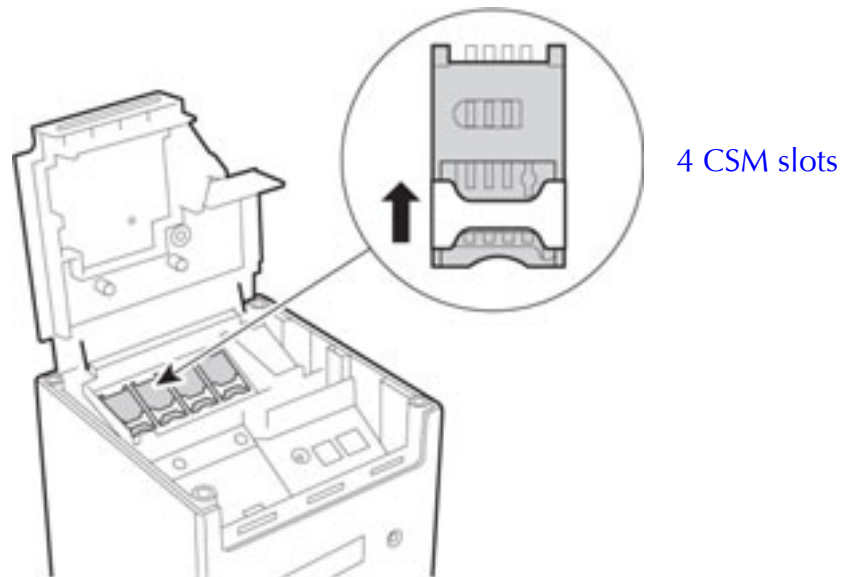


Figure 12 – Chip Security Modules

Banksys' "System-on-Chip"

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

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

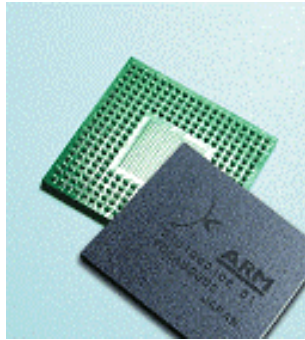


Figure 13 – Banksys' "System-on-Chip"

Power supply

Worldwide, XENTA 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 and 0,7 A. Adapter cables with a standard length of 2 m and a country-specific plug to fit the different wall sockets are available.

The adapter output is 6,5 VDC and 3,05 A. The attached cable has a standard length of 2 m and fits to the power connector of the terminal or the merchant unit.

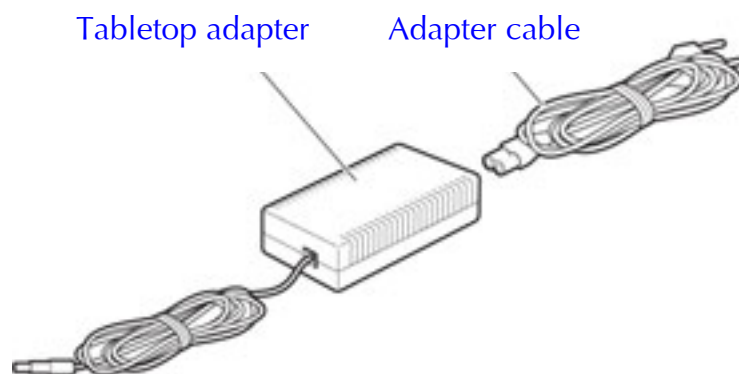


Figure 14 – Power adapter

Housing colour

XENTA has a two-colour housing. The outer top is always light grey (colour code ncs s5020-b); as to the inner top, two versions are standard available: it can be

either blue-grey (colour code ncs s5020-r80b) or dark grey (colour code ncs s6000-n). The darker parts are the ones mainly touched by the customers. The light and dark grey colour is identical to those of our XENTISSIMO mobile payment terminal.

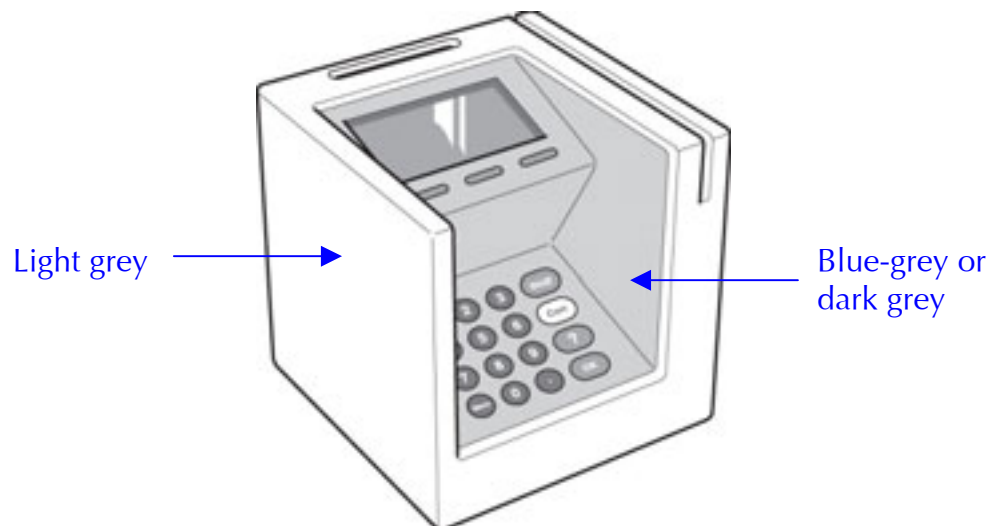


Figure 15 – XENTA housing colour

Selecting a location for the XENTA

Ergonomic factors

XENTA should be installed in a location that is convenient for both the merchant and the cardholder. The following issues need considering:

- Avoid placement of the terminal near direct light sources that can hinder the readability of the display or the keypad;
- Foresee enough space around the XENTA terminal to insert a chip card, to slide a magnetic card, to open the cover of the printer, to replace the paper and to reach the reset button;
- Install the terminal at sufficient distance of mirrors, video cameras, staircases, or similar conditions in the environment, to reduce the risk of observing a cardholder's PIN code;
- Install the terminal at a suitable height. For a customer who is sitting down, the appropriate height is the height of a standard table. For a customer who is standing, the appropriate height is between 90 centimetres and 120 centimetres.

Physical factors

XENTA can only be used when placed on a flat and stable surface and under the following environmental conditions:

- Operating humidity between 20% and 85%, non-condensing;
- Operating temperature between 0° C and 50° C;

Avoid shocks and vibrations, excessive heat and dust, explosive environments, oil or moisture, water or condensation, direct sunlight or objects that radiate heat and environments with fluctuating humidity.

Avoid proximity of devices that cause excessive voltage fluctuations and/or electromagnetic fields such as electric motors or high-frequency devices.

XENTA should be placed at least 2 metres away from any Electronic Article Surveillance (EAS) system; these are the gated areas that identify items as they pass through and that are commonly placed at store exits.

XENTA should be placed at least 0,3 metres away from electrically powered equipment that can generate electromagnetic interferences like power supplies, computers, TL lamps, etcetera.

XENTA should be placed at least 0,3 metres away from active transmitting devices like mobile phones, GPRS antennas, etcetera.

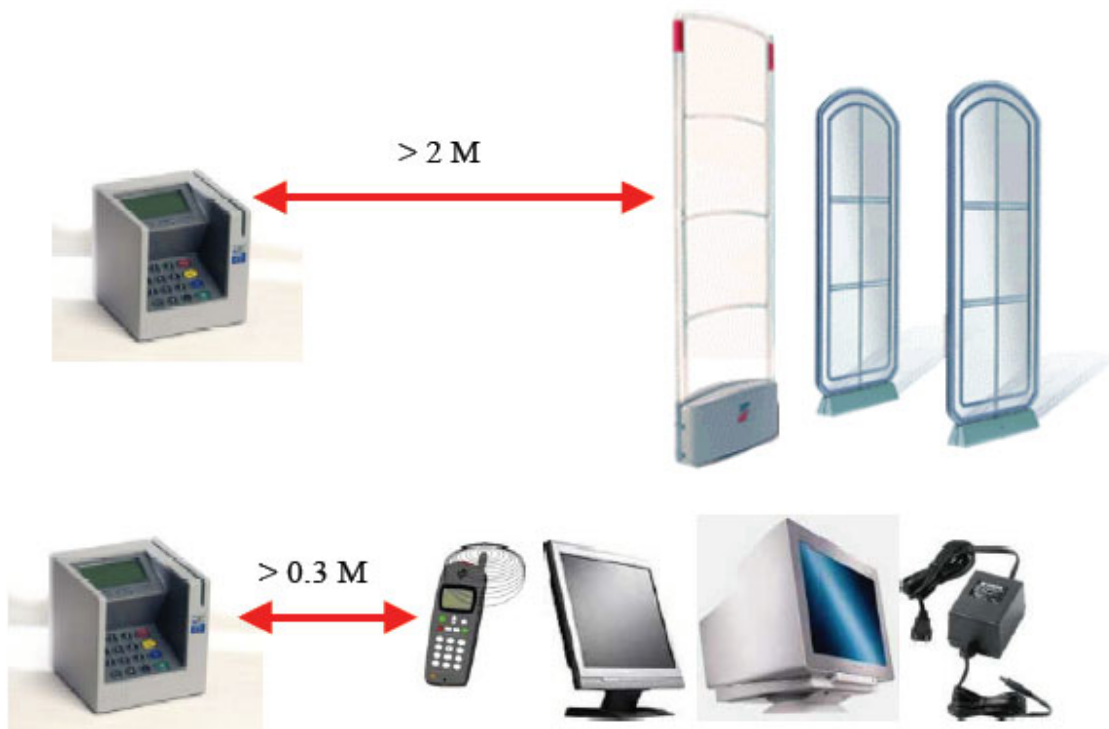


Figure 16 – Proximity of electronic equipment

Security factors

XENTA has been designed to be a secure and freestanding device. All sides but the bottom should be visible so that a cardholder can verify this. Apart from the accessories supplied by Banksys nothing else may be attached to the terminal. Insertion of the XENTA in a desk is not allowed. When required, an unattended payment terminal should be supplied.

When personalizing the XENTA, certain security restrictions have to be known as well:

- No restrictions when painting a company logo or text on the terminal;
- Stickers should always have a translucent background so that they can never catch something a cardholder could not see;
- Stickers may not be added just anywhere on the terminal:
 - No restrictions on the bottom;
 - Stickers may never be attached to the terminal inner housing part (coloured dark grey or blue grey);
 - On the terminal housing outer part, stickers are only allowed in the areas indicated on figure 17;

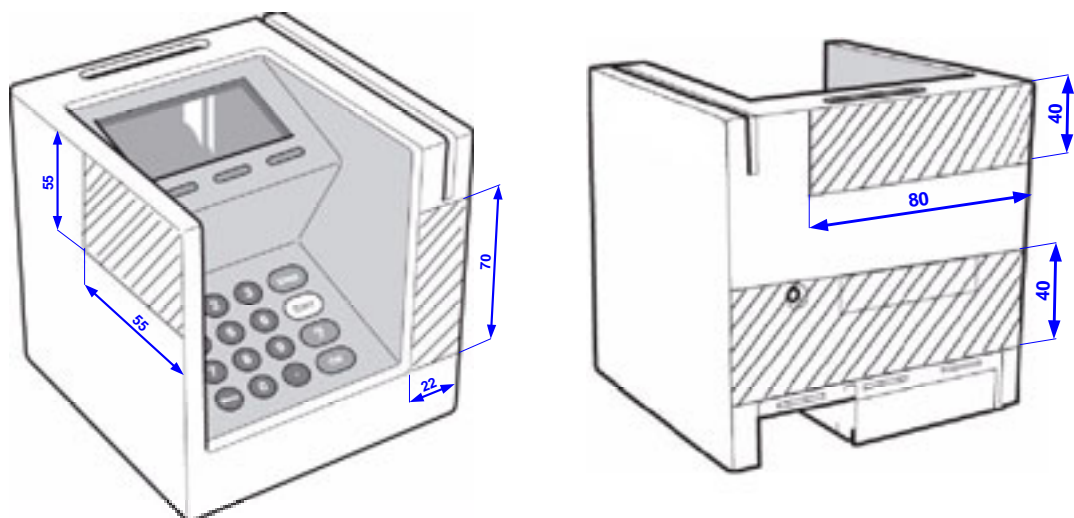


Figure 17 – Attaching stickers

Approvals

The XENTA terminal has earned approvals and certifications based on the following standards:

- EMV 4.0 Level 1 for all chip-card interfaces;

- EMV 4.0 Level 2 approved Kernel for payment application development;
- PCI PED offline and online;
- TQM;
- CE mark, according to ITE equipment;
- MET mark, according to IEC 950 standard;
- EMC specification: EN 55022/CISPR 22, EN 50082-1, EN 61000-3-2 and 3, FCC Part 15 and other country-specific certifications;
- And telecommunication specification, as defined by TBR21, FCC Part 68/IC and national network operators.

The above list is not exhaustive, local and regional certifications are not mentioned in this manual.

Good to know

XENTA is equipped with a reset button (rear side). To reset the terminal, push this button with a tool for at least 5 seconds and wait for the terminal to reboot.

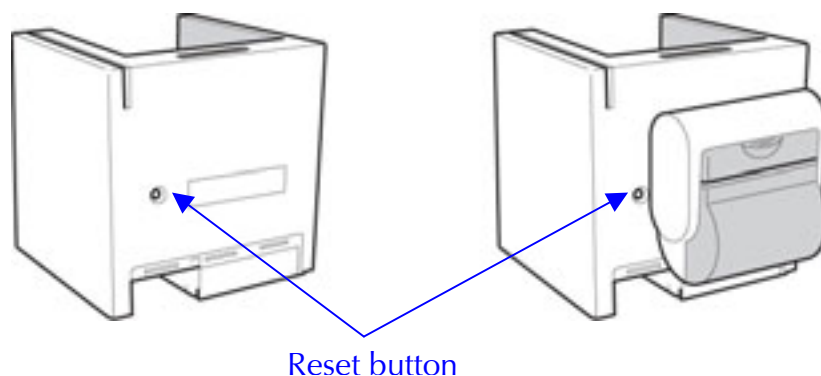


Figure 18 – Reset button

The XENTA interior compartment can optionally be secured by means of a screw in the bottom cover.

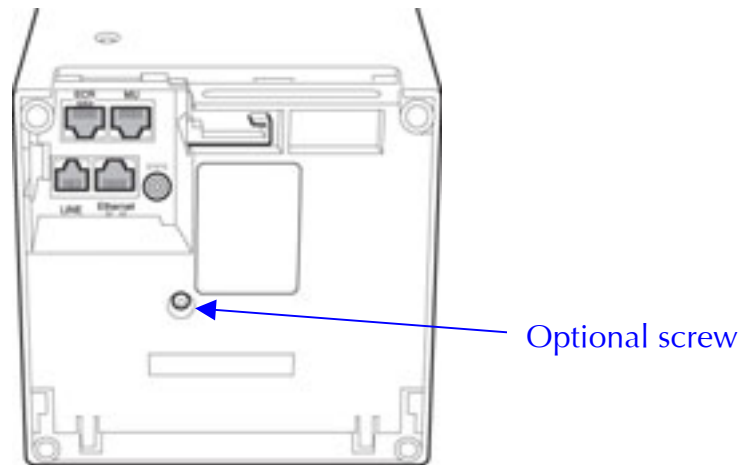


Figure 19 – XENTA interior compartment secured

XENTA is designed with care for our environment.

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

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



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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 security 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.

However, in the terminal design, more sophisticated security measures were 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 prompt erasure of the secure memory.

Security software

The software supports the key management schemes advised by PCI, for example DUKPT (Derived Unique Key Per Transaction) and MK/SK (Master key/Session key).

Other schemes can be added, for example CTAP (for Belgium, The Netherlands and Luxembourg) and ZKA (for Germany).

XENTA 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);
- And ISO 15668 (secure file transfer – retail).

Accessories

Interface boards

Several interface boards are available for additional means of communication with the transaction host. An interface board can be added at any time by technical staff. Just open the bottom cover and insert the chosen interface board into the terminal. For a detailed description, please refer to the *XENTA Service Manual*.

ISDN

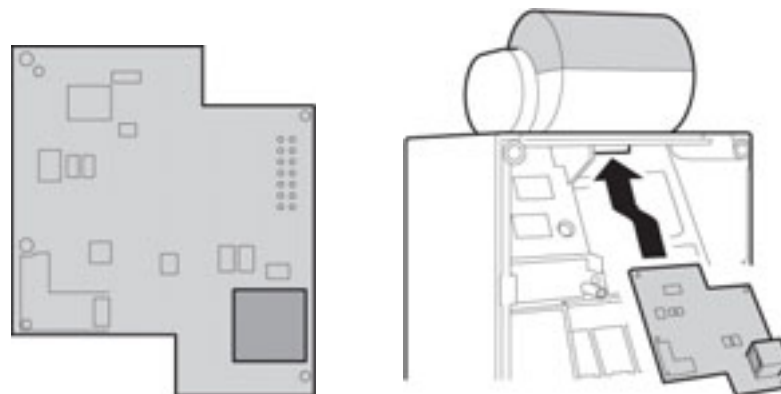


Figure 20 – ISDN interface board

XENTA can be equipped with an ISDN interface.

ISDN is a circuit-switched telephone network system, which allows digital transmission of data over ordinary telephone copper wires. The quality is better and the speed is higher than with analogue systems.

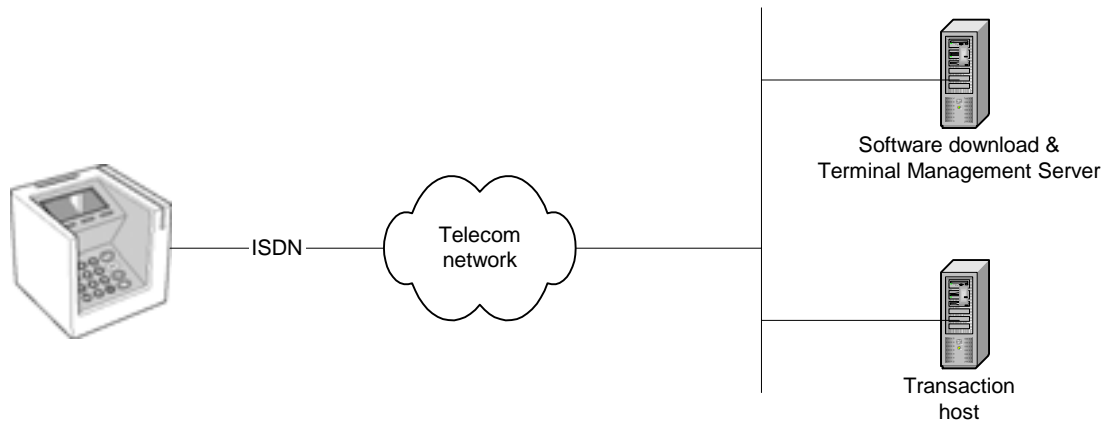


Figure 21 – ISDN configuration

The ISDN interface has the following main specifications:

- Communication with a transaction host using the TCP/IP protocol (PPP) over B-channel or the X.25 protocol over B-channel and D-channel;
- EURO ISDN;
- Communication speed according to BRA;
- Connector type RJ45.

GSM/GPRS

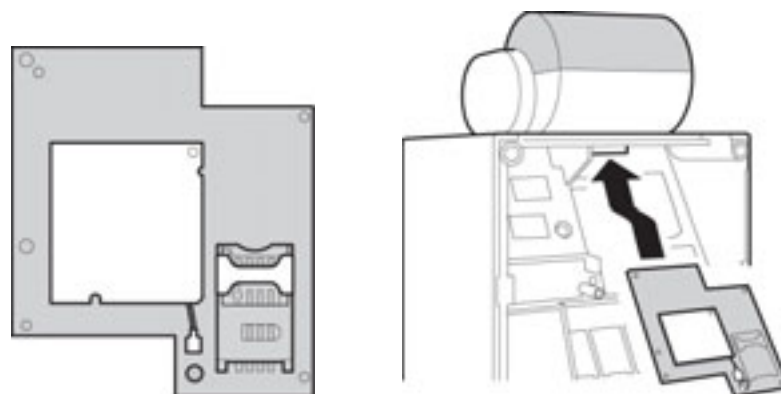


Figure 22 – GSM/GPRS interface board

Equipped with a GSM/GPRS interface, the XENTA terminal offers increased mobility.

Tip: The GSM module does not support voice.

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

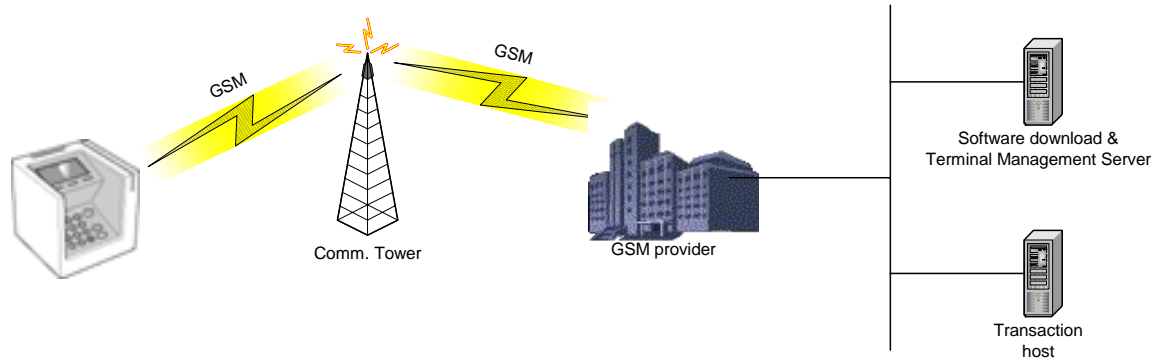


Figure 23 – GSM configuration

For a GPRS transaction, the data is sent to the communication tower from where it is transmitted to the host over a data network. This may be the public Internet. The protocol used is TCP/IP.

Typically, with this type of transactions, data transfer from terminal to host is secured using SSL (Secure Socket Layer).

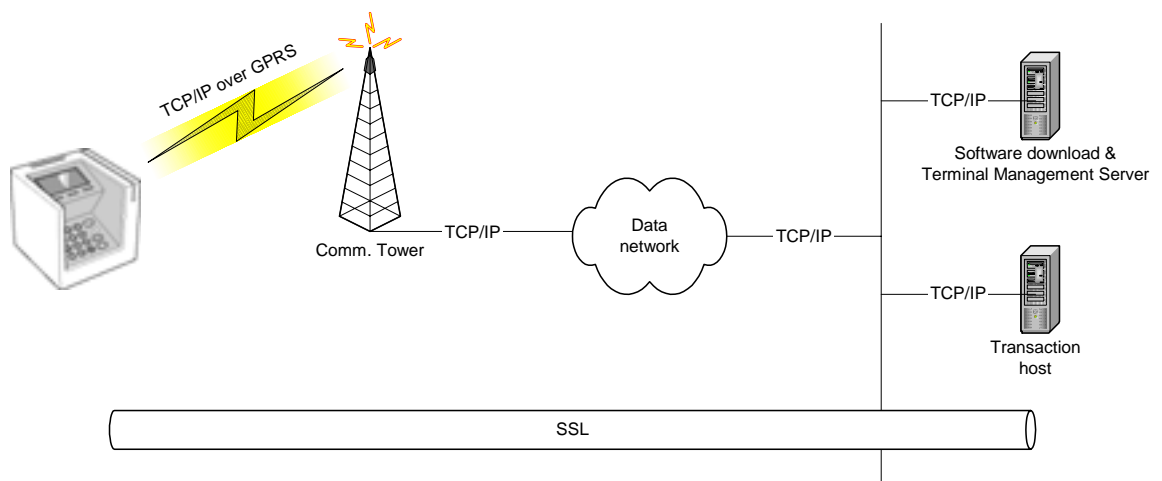


Figure 24 – GPRS configuration

The GSM/GPRS module 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 XENTA) and 42.800 bps in upload mode (from XENTA to host);
- Full roaming service;

- SMS capability: XENTA can send and receive messages of maximum 160 alphanumeric characters;
- Two versions are available: an international tri-band 900-1800-1900 MHz version and an 850-1800-1900 MHz version for certain areas in the USA.

Each interface board has a dedicated SIM slot, accessible through the XENTA bottom cover.

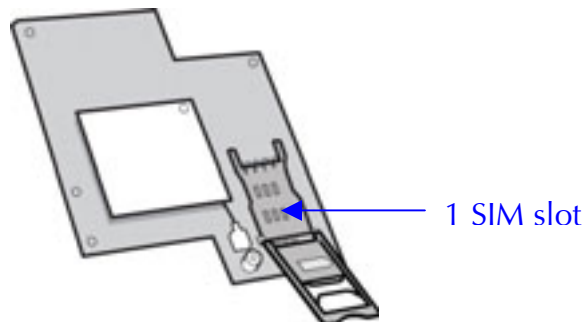


Figure 25 – SIM slot

Currently we only offer an external GSM/GPRS quad-band antenna that has to be connected to the GSM/GPRS interface board.

-
- Cautions:**
- Never glue the antenna onto the XENTA terminal;
 - Never glue the antenna onto a metal surface.
-

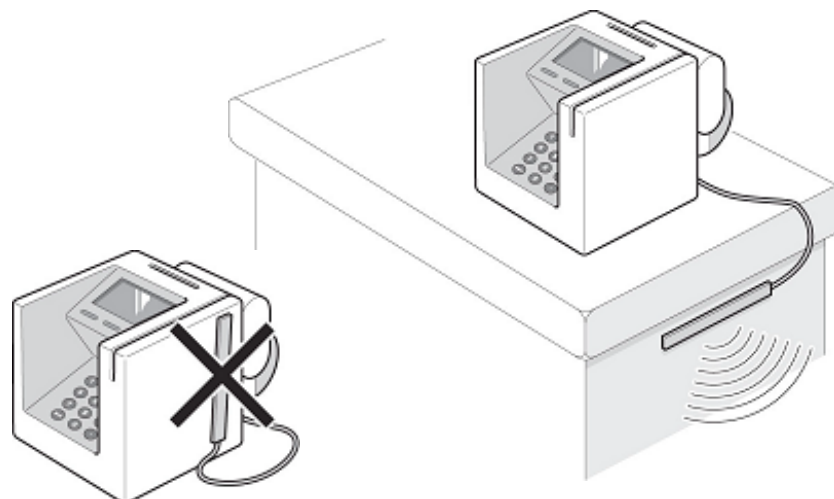


Figure 26 – XENTA with external GSM/GPRS antenna

An integrated quad-band antenna will be available as well. The antenna slides in the XENTA outer housing and has to be connected to the GSM/GPRS interface board.

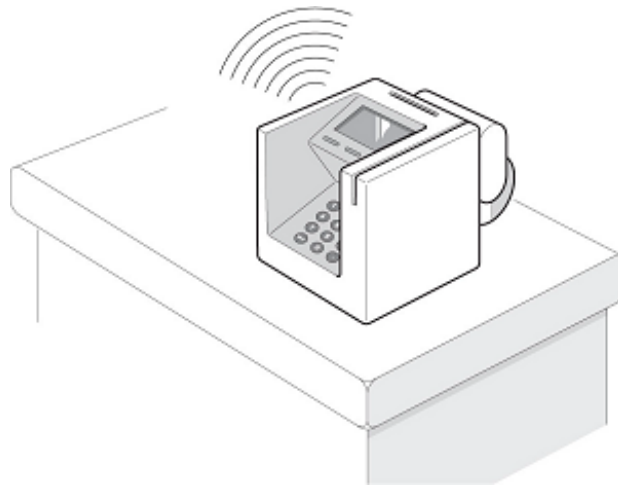


Figure 27 – XENTA with integrated GSM/GPRS antenna

Wireless LAN

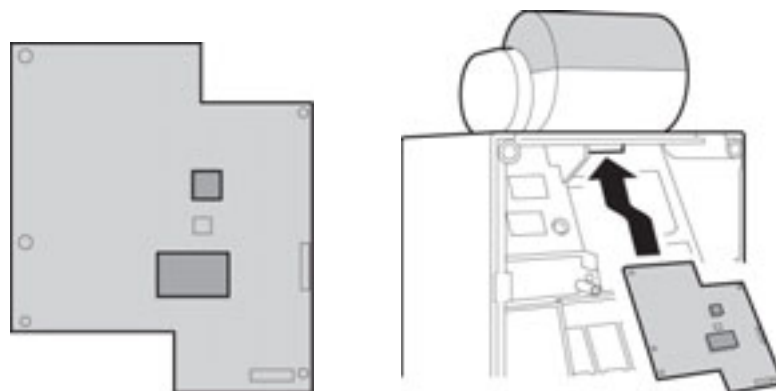


Figure 28 – Wireless LAN interface board

XENTA can be 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 XENTA terminals etcetera.

Data is transferred 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.

For this type of transactions also, the data transfer from terminal to host is secured using SSL (Secure Socket Layer).

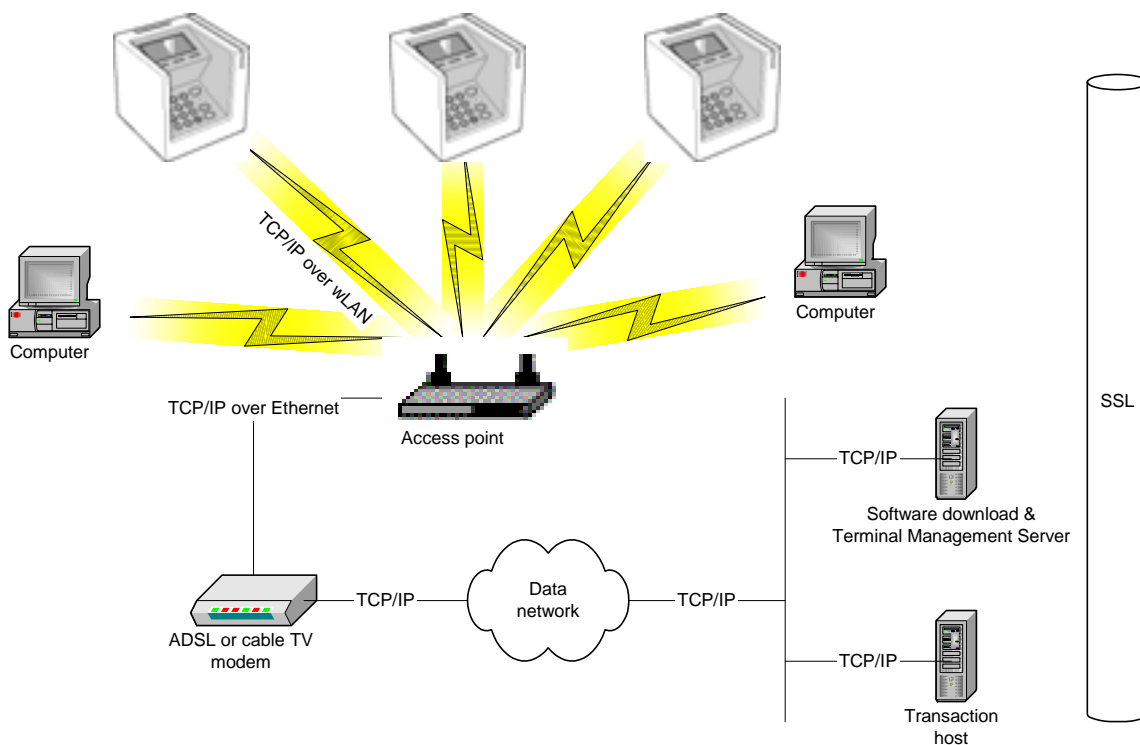


Figure 29 – Wireless LAN configuration with access point

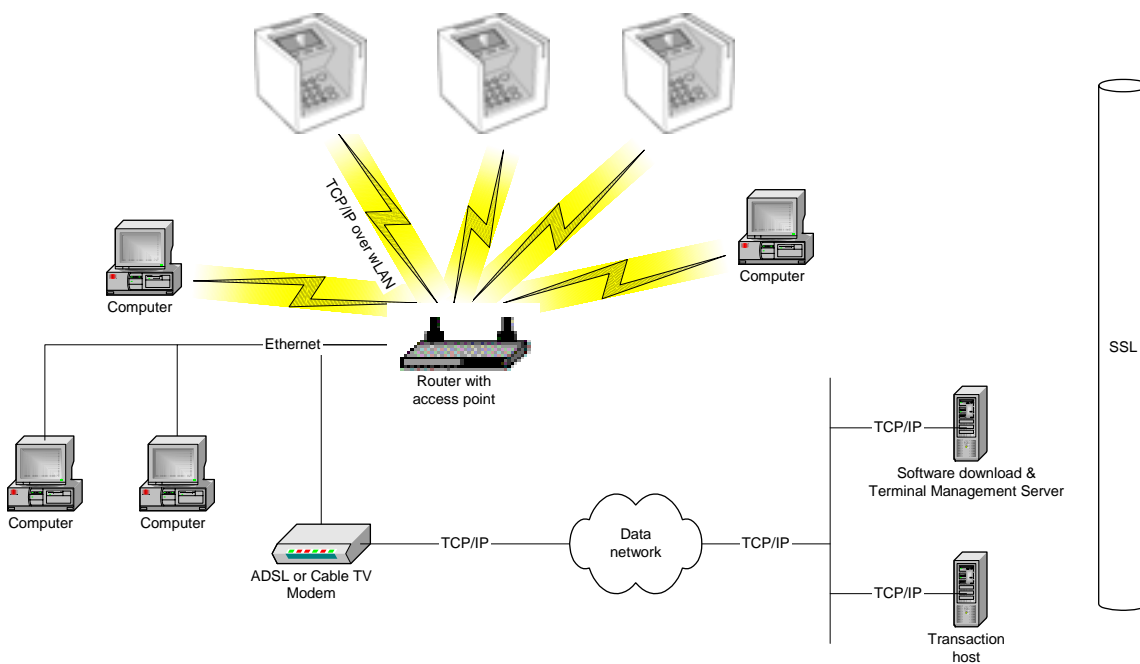


Figure 30 – Wireless LAN configuration with router

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

XENTA must be set up with the same security as installed on the access point. For example WEP, WPA, WPA2, etcetera.

A wireless network requires the same level of network management as any comparable wired network. Yet, it offers flexibility, is widespread and has a good 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 wirelessly with the access point.

The XENTA wireless LAN interface has the following main specifications:

- Conforms with 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, which is a few Mbps;
- Fast interface for 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: 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.

Printer

A fast thermal graphic printer can be screwed at any time by technical staff to the rear of the terminal. For a detailed description, please refer to the *XENTA Service Manual*.

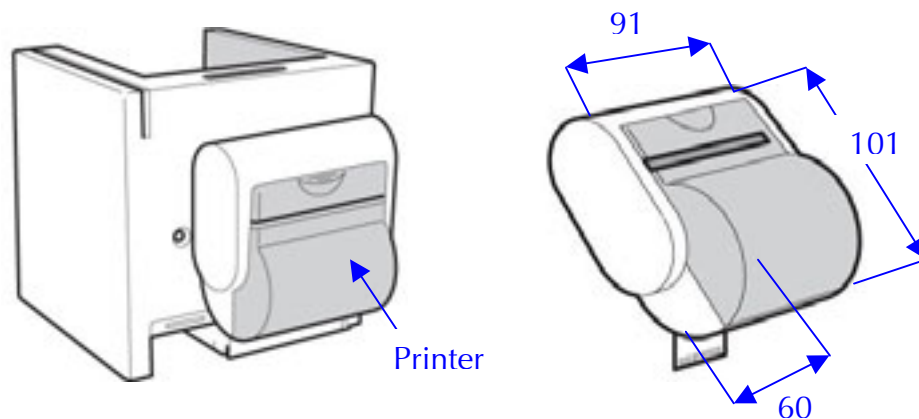


Figure 31 – Printer

The printer has the following main specifications:

- Dimensions: 91 x 60 x 101 mm (w x l x h)
- Weight: 275 g (including paper roll)
- 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, paper lid open and overheating.

The paper has the following main specifications:

- Paper rolls with a width of 58 mm and a length up to 30 m;
- High sensitivity thermal paper Jujo AF50KS-E3.

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

The printer has earned approvals and certifications based on following standards:

- CE mark, according to ITE equipment;
- MET mark, according to IEC 950 standard;
- EMC specification: EN 55022/CISPR 22, EN 50082-1, EN 61000-3-2 and 3, FCC Part 15 and other country specific certifications.

The environmental conditions are identical to those described in the technical specifications of the terminal (chapter “Selecting a location for the XENTA”).

No restrictions are applicable on the printer related to personalisation via stickers.

Merchant unit

In a configuration where the terminal is not connected to an ECR or PC, the use of a merchant unit might facilitate the merchant’s operation. It prevents the merchant from turning the terminal to introduce, for example, the amount the cardholder has to pay.

In this configuration the merchant unit is connected to the XENTA terminal via the dedicated “MU” interface.



Figure 32 – Merchant unit

The merchant unit is a slave device of the terminal, which has all the intelligence. The merchant unit can be considered as a second display, a second keypad and printer of the terminal.

Caution: The merchant unit is not a secure device and should not be used by the cardholder.

The merchant unit has an integrated printer. Its technical specifications are the same as those of the printer that can be mounted onto the terminal.

Merchant unit and terminal have a clearly distinguishable design, making it unlikely that cardholders enter their PIN on a merchant unit.

The merchant unit has the following main specifications:

- Dimensions: 91 x 228 x 68 mm (w x l x h);
- Weight: 480 g (including paper roll in printer);

- Keypad identical to that of the terminal. It has the same 19 keys and all considerations related to accessibility are taken into account. Diverging keypad layouts can be made available upon customer request;
- Display identical to that of the terminal (128 x 64 pixels);
- RJ45 type connector, for connection to the terminal;
- In a configuration with terminal and merchant unit, the merchant unit needs to be connected to the mains supply using the power adapter that accompanies the terminal; the terminal itself is powered via the merchant unit.

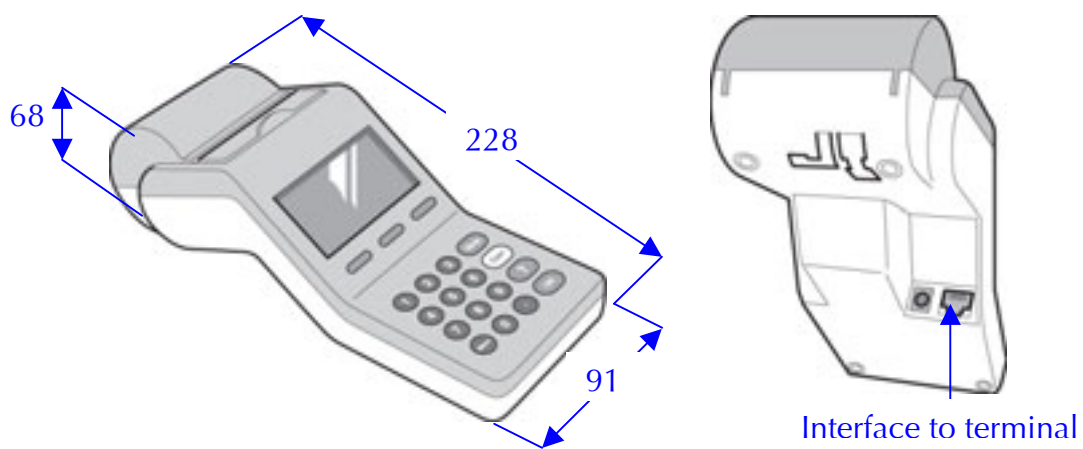


Figure 33 – Merchant unit dimensions and interface

The merchant unit has earned approvals and certifications based on following standards:

- CE, according to ITE equipment;
- Metlab, according to IEC 950 standard;
- EMC specification: EN 55022/CISPR 22, EN 50082-1, EN 61000-3-2 and 3, FCC Part 15 and other country specific certifications.

The environmental conditions are identical to those described in the technical specifications of the terminal (chapter “Selecting a location for the XENTA”).

No restrictions are applicable on the merchant unit related to personalisation via stickers.

Fixation plate

To attach the XENTA terminal to the counter, a fixation plate is available. The terminal “clicks” onto the fixation plate, which, in turn, is connected to the

counter with screws or in other, non-damaging ways, such as dual lock fasteners, double-sided adhesive tape or Velcro.

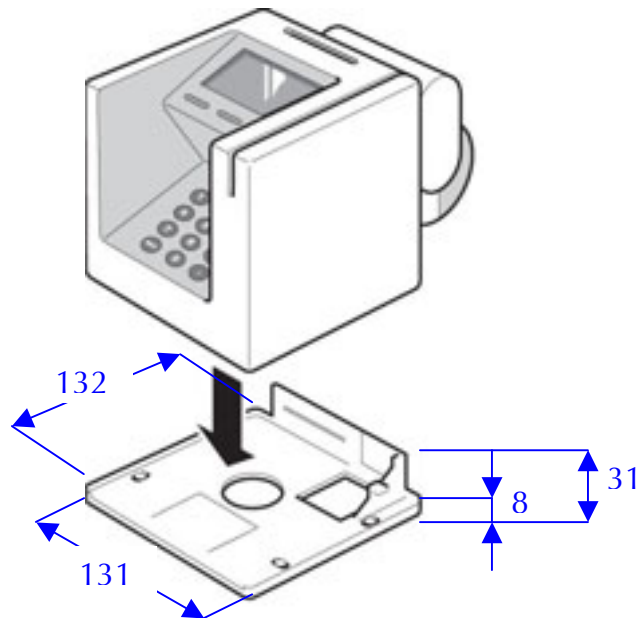


Figure 34 – Fixation plate dimensions

A fixation plate for the merchant unit can be made available upon customer request.

No restrictions are applicable on the fixation plate related to personalisation via stickers.

Swivel

To use the XENTA terminal in a standalone configuration, a swivel is provided to easily turn the terminal towards the merchant and card holder. Rotation over nearly 270 degrees is possible. The design of the swivel is very compact.

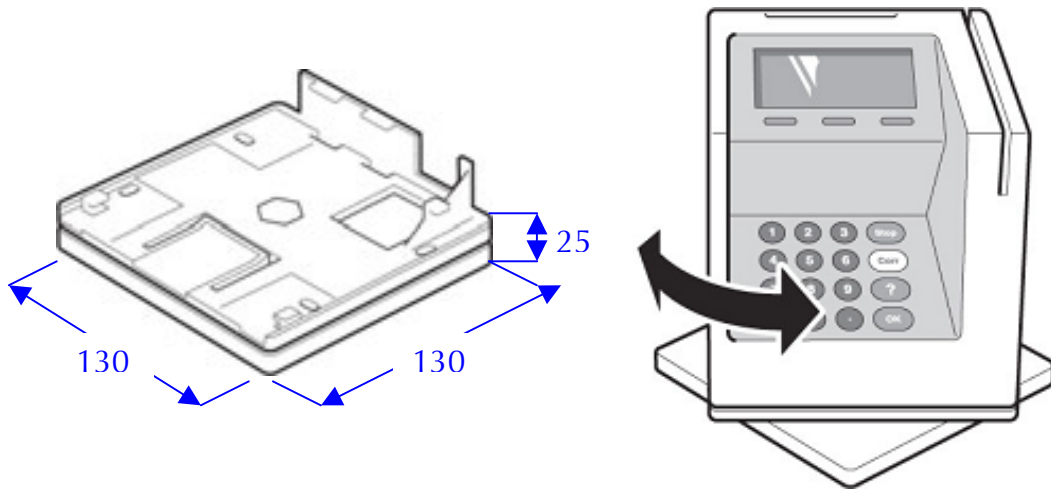


Figure 35 – Swivel dimensions

No restrictions are applicable on the swivel related to personalisation via stickers.

Product identification

XENTA terminal

The XENTA silver rating plate contains following information:

- The company name: Banksys;
- The model name: XENTA terminal;
- The article number referring to the specific terminal hardware:
 - In readable format, for example 9064000001 for a standard terminal equipped with PSTN and Ethernet interfaces;
 - In barcode format (code128a);

Tips:

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

-
- The serial number:
 - In readable format, for example S/N: AHA0002;
 - In barcode format (code128a);
 - The production date: yywk, for example 0629 for week 29 in 2006;
 - “Registered design Banksys NV/SA”
 - Country of origin: for example “Made in Belgium”;
 - Rated voltage and current: 6,5 VDC 3,2 A
 - The WEEE-logo: the crossed wheeled bin;
 - Safety marks: for example CE, MET.

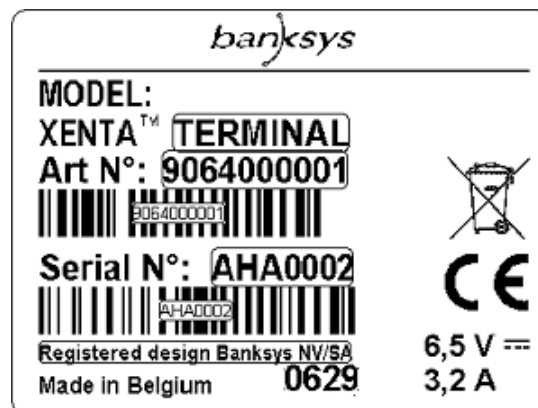


Figure 36 – Terminal rating plate

The second label contains following information:

- The MAC address, in barcode format (code128a), is a unique number attached typically to networking equipment. It is displayed in six groups of two hexadecimal digits “FF FF FF FF FF FF”, for example 00 08 19 AB CD EF. This number can be consulted via software;
- The hardware ID, present in readable text, is a 4-character prefix followed by the MAC address, for example 424B 000819ABCDEF. It is a unique number per terminal used for key loading and terminal parameterisation. This number cannot be consulted via software.

A third label contains following information:

- The hardware version number; this number will be raised for tracking of hardware changes, for example WN001 (WN is the manufacturer code);
 - In barcode format (code128a);
 - In readable format, for example WN001;
- The hardware revision, for example Rev D, the revision will be raised in case of major revisions where re-certification may be implied, for example main board upgrade 4.0 to 5.0.



Figure 37 – Terminal second and third label

When opening the bottom cover two more labels are present:

- A label repeating the MAC address and hardware ID;

- A second label with the article number and serial number of the XENTA main board.

Printer

The printer rating plate contains following information:

- The company name: Banksys;
- The model name: XENTA printer;
- The article number referring to the specific printer hardware:
 - In readable format, for example 7035000002;
 - In barcode format (code128a);

-
- Tips:**
- The article number will differ when choosing, for example a customized colour;
 - The article number is different from the commercial article number mentioned on the packaging box. The latter also includes packaging.
-

- The serial number:
 - In readable format, for example S/N: AFI3916;
 - In barcode format (code128a);
- The production date: yywk, for example 0611 for week 11 in 2006;
- “Registered design Banksys NV/SA”;
- Country of origin: for example “Made in Belgium”;
- Rated voltage and current: 6,5 VDC 3,2 A;
- The WEEE-logo: the crossed wheeled bin;
- Safety marks: for example CE, MET.

Another label contains the hardware version number; this number will be raised for tracking of hardware changes, for example BZ007 (BZ is the manufacturer code);

- In barcode format (code128a);
- In readable format, for example BZ007.

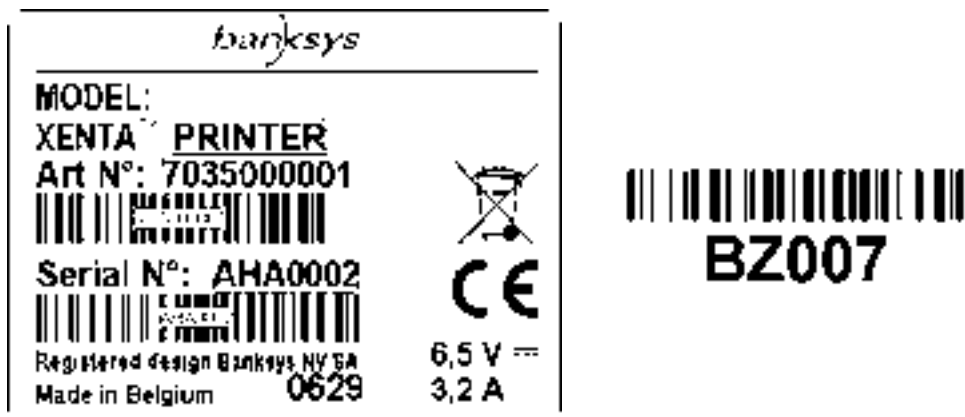


Figure 38 – Printer rating plate and label

Merchant unit

The merchant unit rating plate contains following information:

- The company name: Banksys;
- The model name: XENTA merchant unit;
- The article number referring to the specific merchant unit hardware:
 - In readable format, for example 9064100002;
 - In barcode format (code128a);

Tips:

- The article number will differ when choosing, for example a customized colour;
- The article number is different from the commercial article number mentioned on the packaging box. The latter also includes packaging.

- The serial number:
 - In readable format, for example S/N: AEQ1309;
 - In barcode format (code128a);
- The production date: yywk, for example 0611 for week 11 in 2006;
- Country of origin: for example “Made in Belgium”;
- Rated voltage and current: 6,5 VDC 3,2 A;
- The WEEE-logo: the crossed wheeled bin;
- Safety marks, for example CE, MET.

Another label contains the hardware version number; this number will be raised for tracking of hardware changes, for example BZ007 (BZ is the manufacturer code);

- In barcode format (code128a);
- In readable format, for example BZ007.

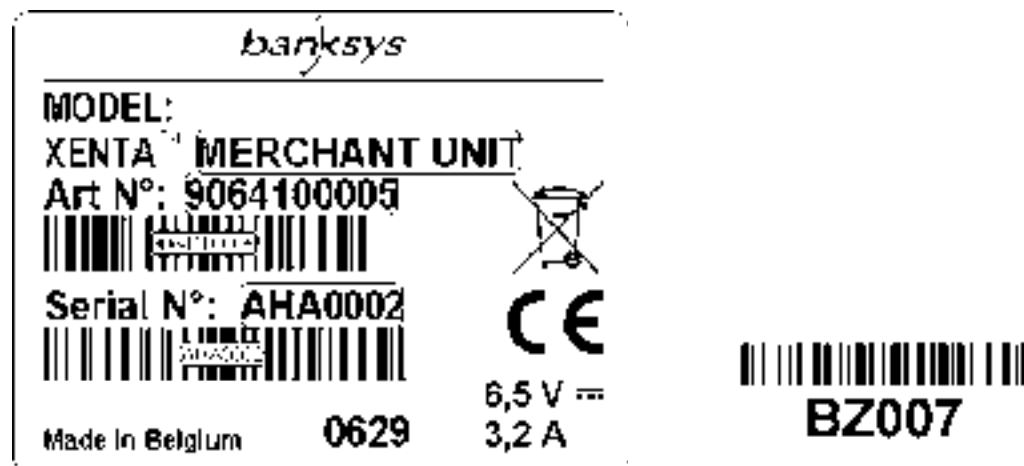


Figure 39 – Merchant unit rating plate and label

Terminal package box

The terminal package box label contains following information:

- The commercial name: for example XENTA BE for a XENTA only for customer "BE";
- The commercial article number referring to the complete configuration. This is usually a customer-specific number;
 - In barcode format (code128a);
 - In readable format, for example Art Nr: 61001*1 or 9364000002 type;
- The terminal production date: Wk: yywk, for example 0644 for week 44 in 2006;
- The software loaded by Banksys on the terminal, for example SW: xx.xx.xx. SW: none means that the terminal contains the generic platform;
- The terminal serial number:
 - In readable format, for example S/N: AAA0089;
 - In barcode format (code128a);
- The terminal MAC address;
 - In barcode format (code128a);
 - In readable format, for example 000819FEDCBA;

- The terminal hardware version number;
 - In barcode format (code128a);
 - In readable format, for example BZ007.
- Safety marks: for example CE, MET.



Figure 40 – Terminal package box label

Tips:

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

Merchant unit package box

The merchant unit package box label contains following information:

- The commercial name: for example XENTA merchant unit grey;
- The commercial article number referring to the complete configuration. This might be a customer-specific number;
 - In barcode format (code128a);
 - In readable format, for example Art Nr: 63001*1 or 9264100002 type;
- The merchant unit production date: Wk: yywk, for example 0644 for week 44 in 2006;
- Since no software is loaded in the merchant unit, SW: none is marked;
- The serial number:

- In readable format, for example S/N: ADY3466;
- In barcode format (code128a);
- The hardware version number;
 - In barcode format (code128a);
 - In readable format, for example BZ002.
- Safety marks: for example CE, MET.



Figure 41 – Merchant unit package box label

Tips:

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

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Product package

XENTA terminal

The individual package is designed to contain the XENTA terminal; the mains power adapter, the country specific adapter cable, the fixation plate and a documentation set. Small accessories 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.

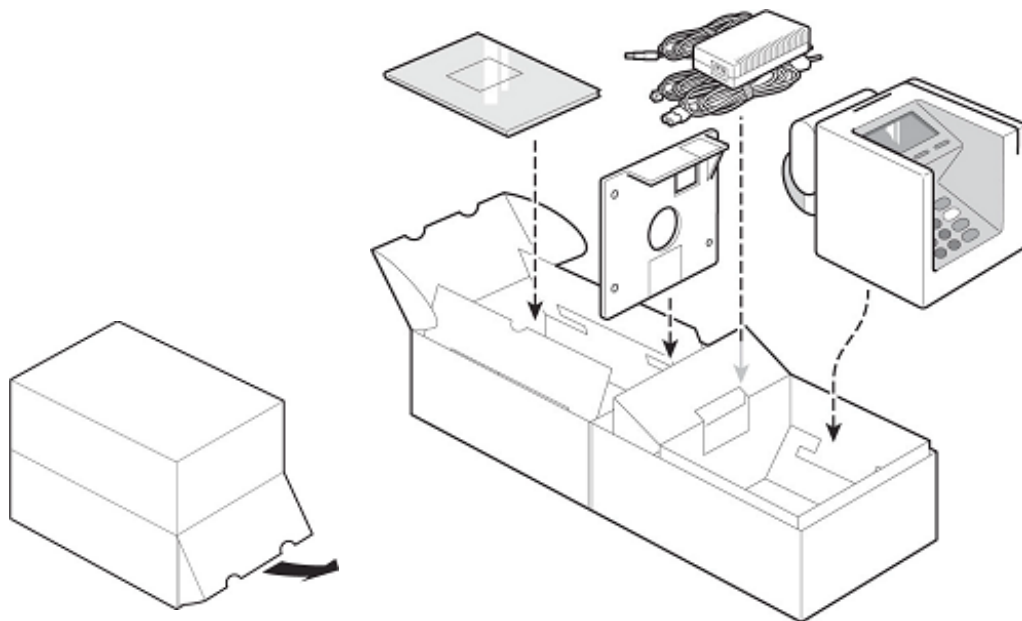


Figure 42 – Terminal package box

Terminal package box dimensions: 170 x 280 x 170 mm (w x l x h)

Banksys warehouse uses standard Euro pallets and restricts the pallet pile-up height to 1.800 mm. For a fully loaded Euro pallet, this corresponds to:

- 190 terminals (10 layers of 19 boxes);
- A volume of 800 x 1.200 x 1.680 mm (w x l x h);
- An approximate weight of 331 kg.

On request alternative freighting can be arranged, for example for air shipments.

The following storage conditions are valid:

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

Merchant unit

The package is designed to contain the merchant unit and the XENTA merchant unit cable. Small accessories can be added at the distributor's site. This package has the same footprint as the terminal package.

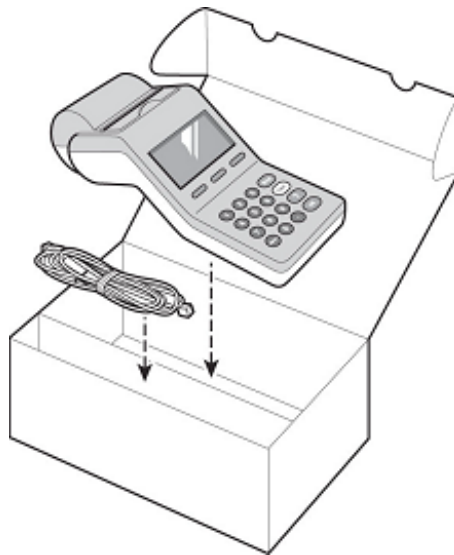


Figure 43 – Merchant unit package box

Merchant unit box dimensions: 170 x 280 x 85 mm (w x l x h)

Banksys warehouse uses standard Euro pallets and restricts the pallet pile-up height to 1.800 mm. For a fully loaded Euro pallet, this corresponds to:

- 380 merchant units (20 layers of 19 boxes);
- A volume of 800 x 1.200 x 1.750 mm (w x l x h);
- An approximate weight of 320 kg.

On request alternative freighting can be arranged, for example for air shipments.

The following storage conditions are valid:

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

Swivel

The swivel is, due to its heavy weight, only available in individual package.

Swivel package box dimensions: 185 x 185 x 70 mm (w x l x h).

A packed swivel weighs 0,820 kg.

The storage conditions are identical to those described in the product package of the terminal.

Bulk packages

XENTA terminal

The terminal bulk package is designed to contain either 12 XENTA terminals or 8 with the printer mounted. The terminals are positioned with the bottom cover facing upwards.

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

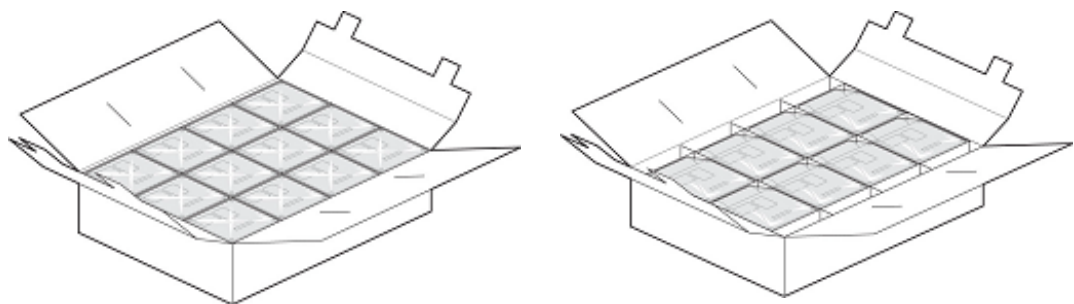


Figure 44 – Terminal bulk package box

Terminal bulk package box dimensions: 590 x 500 x 145 mm (w x l x h)

Banksys warehouse uses standard Euro pallets and restricts the pallet pile-up height to 1.800 mm. For a fully loaded Euro pallet, this corresponds to:

- For XENTA terminals without printer:
 - 528 terminals (11 layers of 4 boxes);
 - A volume of 800 x 1.200 x 1.800 mm (w x l x h);

- An approximate weight of 497 kg.
- For XENTA terminals with printer:
 - 352 terminals (11 layers of 4 boxes);
 - A volume of 800 x 1.200 x 1.800 mm (w x l x h);
 - An approximate weight of 461 kg.

On request alternative freighting can be arranged, for example for air shipments.

The following storage conditions are valid:

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

Accessories and spare parts

The bulk package contains individually packed items. The items marked with (*) can be ordered individually as well.

Below is a (non-exhaustive) list of items delivered in a bulk package. Please note that the quoted values are approximate.

- Printer (with mounting screws and paper roll)
 - 10 printers in a box;
 - Package dimensions: 410 x 265 x 95 mm (w x l x h);
 - Package weight: 3,300 kg;
- ISDN interface boards (no cables)
 - 20 interface boards in a box;
 - Package dimensions: 397 x 261 x 94 mm (w x l x h);
 - Package weight: 0,940 kg;
- GSM/GPRS and WLAN interface boards
 - 30 interface boards in a box;
 - Package dimensions: 364 x 285 x 90 mm (w x l x h);
 - Package weight: 1,430 kg;
- Fixation plate (*)
 - 80 fixation plates in a box;
 - Package dimensions: 350 x 290 x 400 mm (w x l x h);
 - Package weight: 4,850 kg;
- XENTA tabletop adapter (*)
 - 32 adapters in a box;
 - Package dimensions: 425 x 335 x 210 mm (w x l x h);
 - Package weight: 7,750 kg;
- 230V power cable with flat plug (*)
 - Cable length 2 m;

- 200 cables in a box;
- Package dimensions: 550 x 270 x 290 mm (w x l x h);
- Package weight: 21 kg;
- 230V power cable with round plug (*)
 - Cable length 2 m;
 - 150 cables in a box;
 - Package dimensions: 540 x 350 x 200 mm (w x l x h);
 - Package weight: 17,400 kg;
- 110V power cable (*)
 - Cable length 2 m;
 - 150 cables in a box;
 - Package dimensions: 260 x 520 x 260 mm (w x l x h);
 - Package weight: 17,5 kg;
- 240V AU power cable (*)
 - Cable length 2 m;
 - 200 cables in a box;
 - Package dimensions: 300 x 550 x 300 mm (w x l x h);
 - Package weight: 30 kg;
- XENTA merchant unit cable (*)
 - Cable length 2 m;
 - 500 merchant unit cables in a box;
 - Package dimensions: 400 x 400 x 400 mm (w x l x h);
 - Package weight: 16 kg;
- XENTA package box (cardboard)
 - 500 cardboards on a pallet;
 - Pallet and boxes occupy a volume of 800 x 1.200 x 1.600 mm (w x l x h);
 - Pallet and boxes weigh 202 kg;
- XENTA Banksys paper
 - 9 paper rolls in a box;
 - Package dimensions: 160 x 175 x 60 mm (w x l x h);
 - Package weight: 0,96 kg;
- TORX 10 screw for XENTA printer
 - 2 screws in a small plastic bag;
- XENTA printer connector cover (*)
 - 1.500 printer connector covers in a plastic bag;
 - Package weight: 2,500 kg;
- XENTA printer roller (*)
 - 300 rubber printer rollers in a box;
 - Package dimensions: 330 x 480 x 190 mm (w x l x h);
 - Package weight: 6 kg;

The storage conditions are identical to those described in the product package of the terminal.

Development environment

XENTA comes with a professional, full-featured Linux-based application development environment supporting the common programming languages C and Java.

The development environment contains following components:

- Two development frameworks;
 - The backward-compatibility environment (SBCE), only for customers who want to port existing C-ZAM/SMASH applications onto the XENTA terminal;
 - The powerful Model for Application Programming on SAMOA (MAPS), allowing customers to develop applications that exploit the full functionality of XENTA. Please note that SAMOA is the code name for the “System-on-Chip” and the complete development environment.
- A tool chain to develop applications for both development environments in C or Java on a PC running Debian GNU/Linux (Release 3.0) as an operating system.
- Supporting tools for, for example, User Interface generation and platform upgrades.
- Comprehensive documentation, including among others:
 - 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.

Following development accessories are available:

- A specific XENTA development terminal (partly red painted);
- A debug interface (for XENTA, XENTISSIMO and XENTEO).

Committed to Innovation



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Banksys™ - Haachtsesteenweg 1442 Chaussée de Haecht - B-1130 Brussels - Belgium
Tel +32 (0)2 727 66 44 - Fax +32 (0)2 727 72 83 - sales.marketing@banksys.be - www.banksys.com