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beyond payment

Intégration Guide

iUP 250 & iUR 250

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The scope of this document is to assist third party integrators when dealing with Ingenico UNattended products (iUN) such as iUP250 and iUR250, both certified PCI PTS 3.x, or others. It offers all information needed for a successful integration of iUP250 and iUR250 products into unattended kiosk machines.

For any sales information please refer to your Ingenico contact into the region.

Updates table

Version	Date	Nature of modifications	Author	Visa
1.0	17/11/2011	First version	D.GEORGES	
2.0	01/06/2012	Official version	D.GEORGES	

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1 GENERAL

1.1 DEFINITION OF ACRONYMS

EMC	Electro Magnetic Compatibility
EMV	Europay, Mastercard, Visa
EVA	European Vending Association
GND	Ground
GPRS	General Packet Radio Service
GSM	Global System for Mobile communications
LCD	Liquid Crystal Display
LLT	Local Loading Tool
MDB	Multi Drop Bus
PCI	Payment Card Industry
PIN	Personal Identification Number
PSTN	Public Switched Telephone Network
PTS	PIN Transaction Security
RAM	Random Access Memory
RS232	Recommended Standard 232. A standard for serial binary communications
SAM	Secure Access Module – the chips storing the electronic cash register in a stored value scheme such as Moneo, Proton or VISA Cash.
SMA	SubMiniature version A
USB	Universal Serial Bus

1.2 IUP250 & IUR250 PAYMENT SOLUTION PRESENTATION

The iUN series is the new range of Ingenico UNattended (iUN) devices to offer payment into any kiosk through any segments (petrol, transport, vending, parking, etc.).

The two first modules offered for contact cards and PIN management are:
- A PINPad, the iUR250,
- An Hybrid Card Reader, the iUR250.

These compact devices are designed to fit everywhere, thanks to an easy installation, respectful of EVA standard (iUP250) and IMB standard (iUR250). Usage can be indoor or outdoor, resisting to harsh environment.

Both products, certified PCI PTS 3.x, must be installed together into an environment that must comply with several rules described into this document to remain PCI PTS 3.X certified.

Remarks:
- Additional peripherals can be added to build a complete solution such as printer or bar code reader. Ingenico does not provide these devices so far but they can be connected to the iUP250 (through, USB, or RS232).
- Ingenico is also offering other iUN modules dedicated to contactless like iUC150 or iUC180. The iUC150 is the preferred contactless peripheral for the iUP250+iUR250 system.

The iUN series is the next generation of Ingenico leveraging of experience from previous product ranges, i9500 series or CAD30 series, to renew your experience of unattended payment.

1.2.1 Diagram of iUP250 & iUR250 connectivity and communications
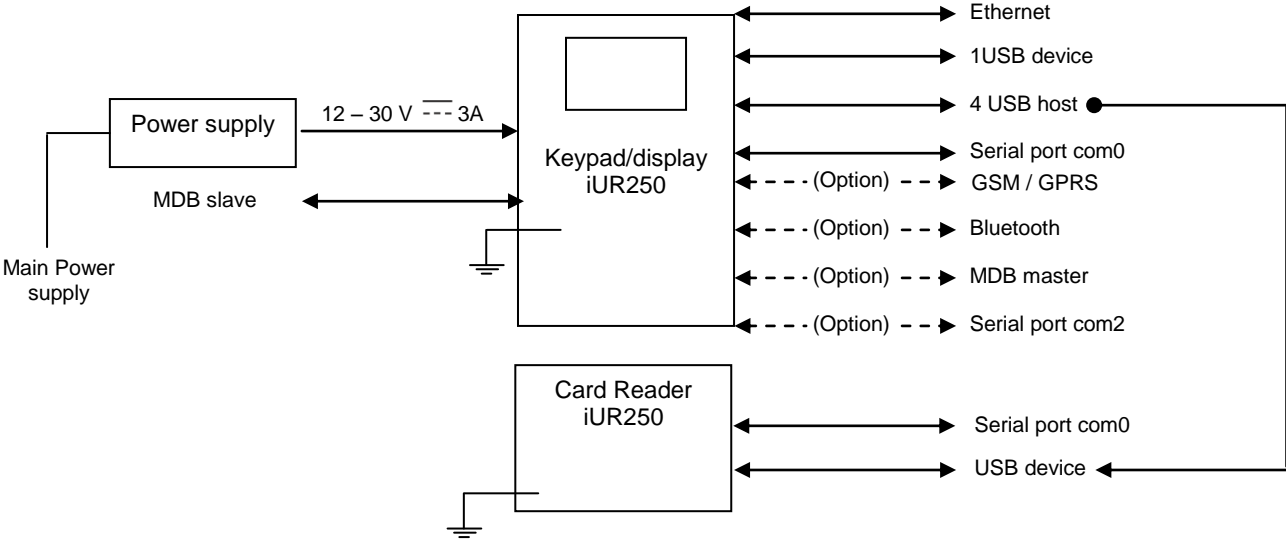
1.2.2 Examples of integration

1.2.3 Services

Training	- Installation and exploitation - Softwares - OEMC/M²OS development (days) - EMV Level 2 package (2 days) - Development workstation SDK
Support	- Hot-line support - Technical assistance
After-Sales Service	Fixed cost repair of iUN products
Downloading server centre	- User licence - Installation and commissioning - User training - Hot-line support - Technical assistance
Softwares / Licences	- User licence for local loading tool, LLT - User licence for applications software - User licence for M²OS - Licence for software signature tool, SAT - Licence for "EMV Level 2 package " - Licence for TCP/IP …

1.3 DESCRIPTION OF MODULES

1.3.1 iUP250

Front view
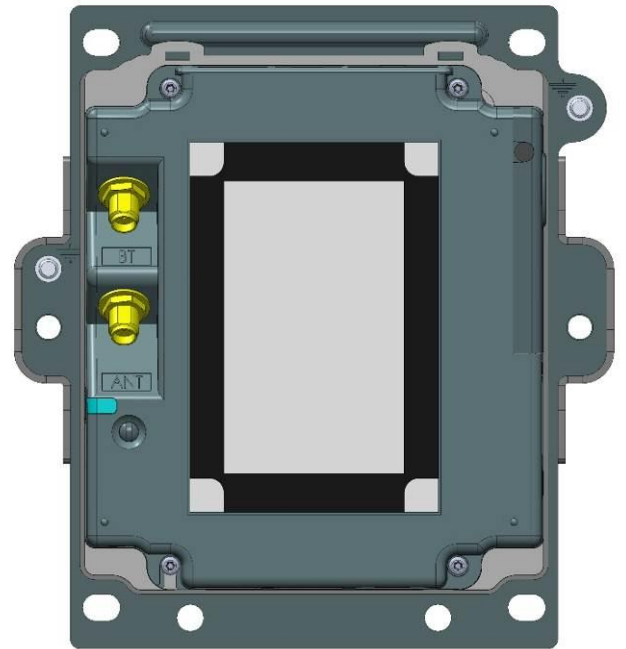
Rear view

1.3.1.1 Technical Hardware characteristics

iUP250 technical characteristics:

Mass	700 g
Dimensions	132 x 123 x 46 mm (height x width x depth)

Operating conditions

Operational temperature*	-20°C,+55°C
Functional temperature*	-20°C, +65°C
Max relative humidity	85% at 55°C, non-condensing
Maximum backward leaning	30 degrees from vertical
Power Supply	12 – 30 V max $\overline{\overline{}}$ --- 3A
Platform	Telium2
Memory	16 Mb SDRAM and 128 Mb Flash
Functionality	Keys: 17 metallic keys 128 x 64 graphic display RGB Backlight Buzzer RGB led internal status indicator 1 Maintenance Button µSD 2 SAM 1 SIM (optional) 1 Jack for external lighting wake-up mechanism on RS232 connectors

Link	Ethernet
	GSM/GPRS (optional)
	Bluetooth (optional)
	4 USB host (1.2 A total max)
	1 USB device
	2x RS232 (1 optional)
	MDB slave
	MDB Master (optional)

* 55°C is a maximum using temperature for user safety (IEC 60950). The product is operational up to 65°C with no tampering issue.

Storage conditions

Storage temperature	-20°C,+65°C
Max relative humidity	85% at 55°C, non-condensing

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1.3.1.2 iUP250 output connectors description

COM0 link   MDB slave   MDB master

SIM

2 SAM

µSD

Pinshield light output   COM2 Link

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USB Device USB hosts Ethernet

Bluetooth Antenna

GSM Antenna

LLT/Maintenance LED

LLT/Maintenance Button

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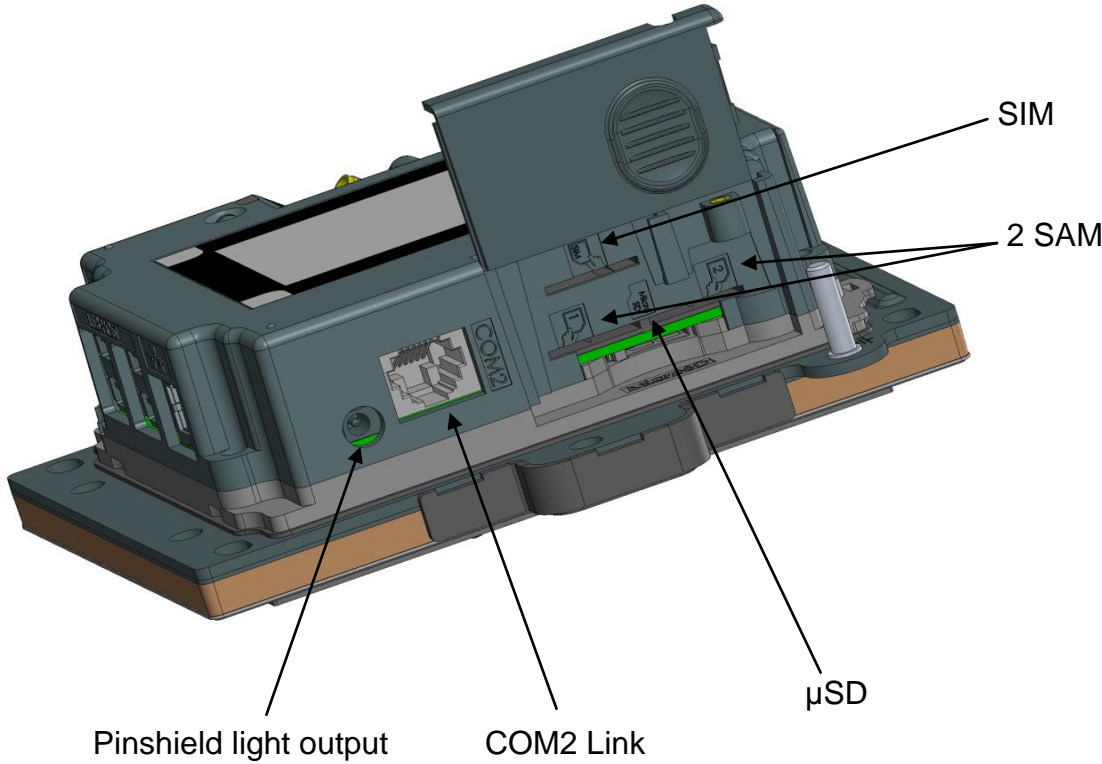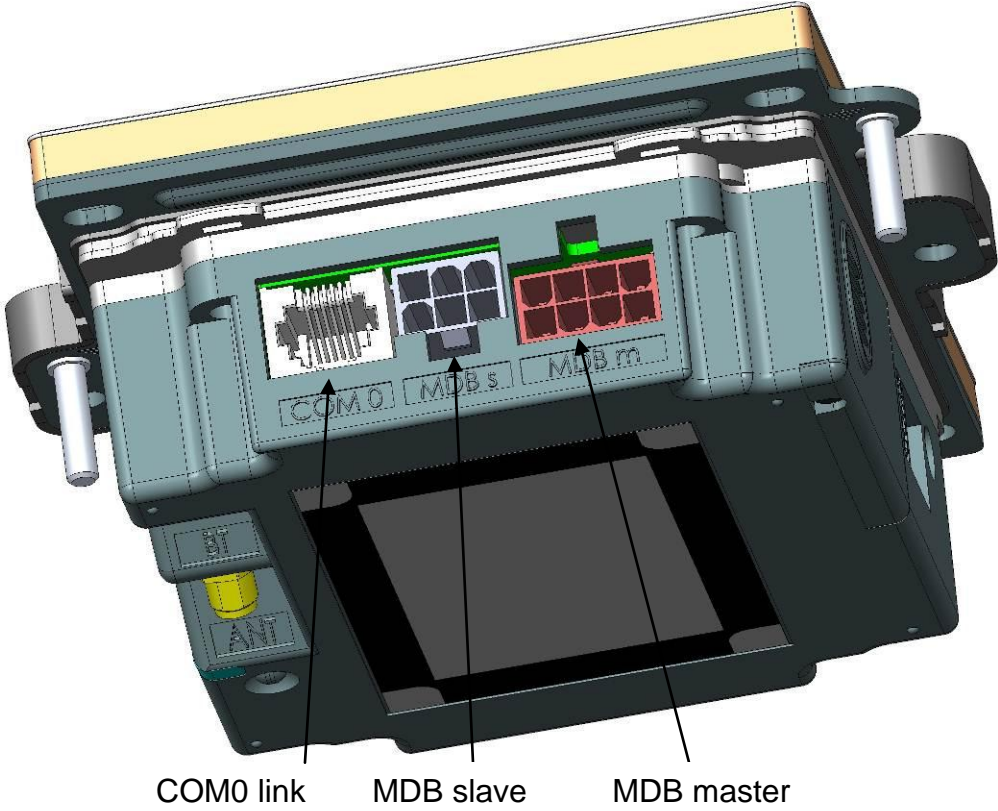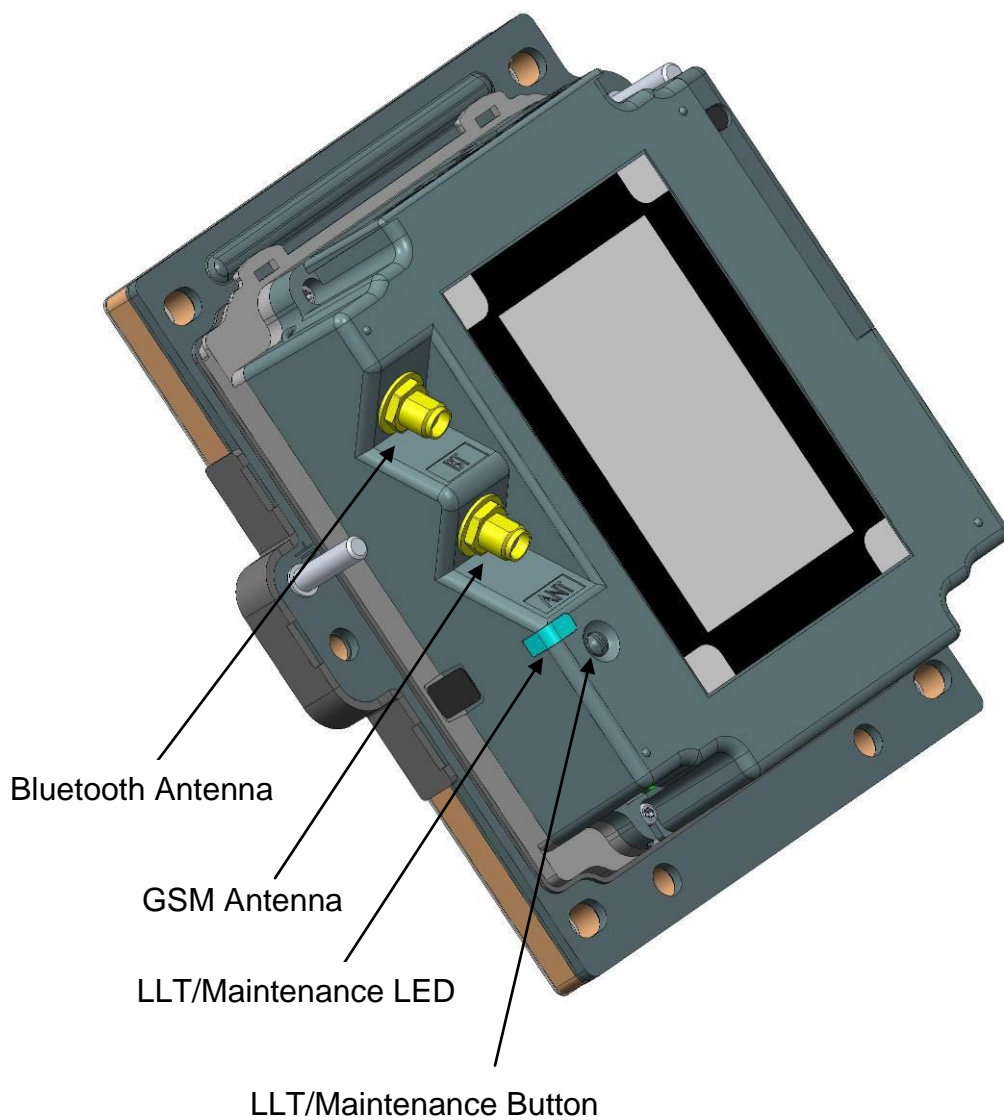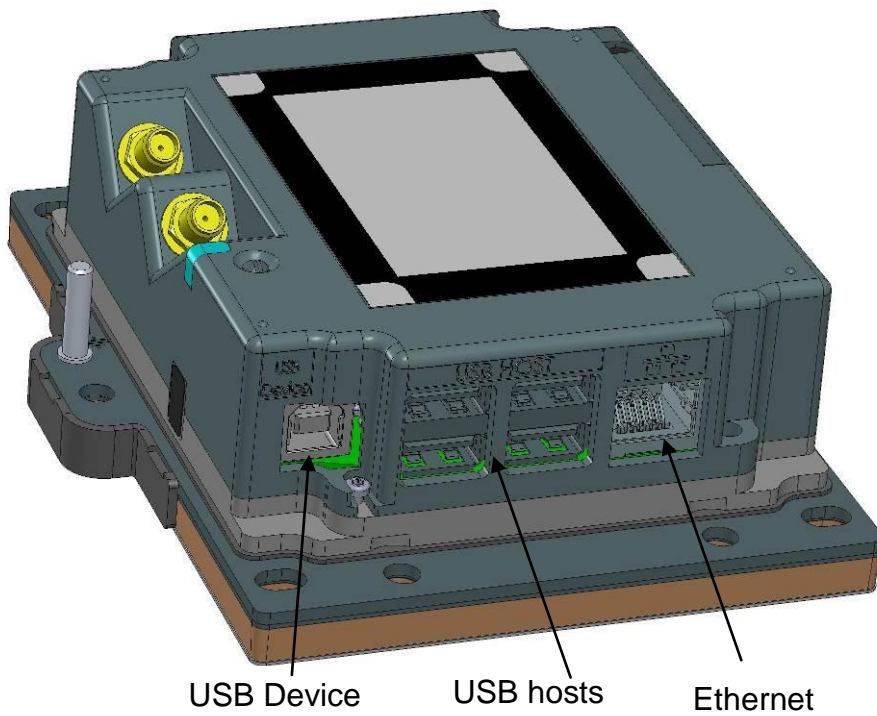
1.3.1.2.1 Ethernet

The IUP250 PINPad unit can be connected to Ethernet. The connector type is shielded RJ45.
The Ethernet cable is standard and not provided.
The Ethernet cable must be shielded.

1.3.1.2.2 USB device

The IUP250 PINPad unit can be connected by type B USB.

1.3.1.2.3 USB host

The iUP250 PINPad unit can drive 4 USB accessories. The connector is standard type A.
The power available is limited to 1.2A Max dispatched between the 4 USB.

1.3.1.2.4 Wake-up mechanism

iUP250 is design to save power thanks to a "stand-by mode".

To wake-up iUP250, press green key or use Wake-up mechanism.
Pin 2 of COM0 link & COM2 link drive the wake-up mechanism.

Wake-up pin state	
Hz (high impedance)	Stand-by authorized
Drive to "0"	Wake-up / Stand-by unauthorized

The Wake-up pin is drive to "0" by the one asking the wake-up.
It could be driven by iUR250, iUP250 or any devices designed to be compliant (Host device…).²
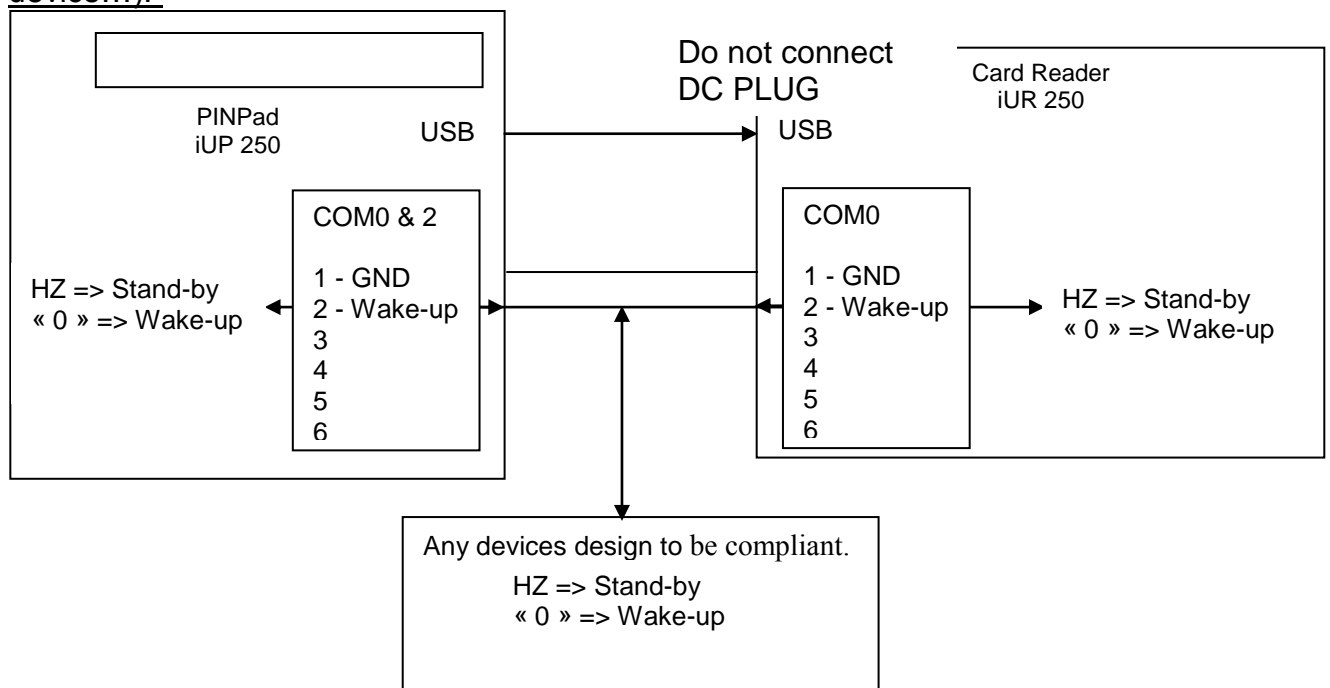
1.3.1.2.5 COM0 link

The iUP250 PINPad unit can be connected to serial port COM0. The connector type is RJ11.

Pin N°	Function
1	GND
2	Wake-up
3	RXD
4	TXD
5	CTS
6	RTS

Pin 6   Pin 1
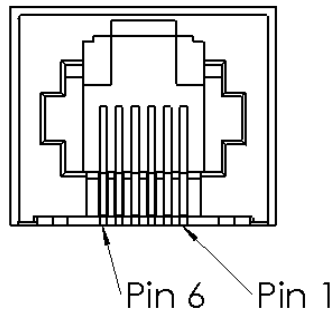
1.3.1.2.6 COM2 link (optional)

The iUP250 PINPad unit can be connected to serial port COM2 if the option is available. The connector type is RJ11.

Pin N°	Function
1	GND
2	Wake-up
3	RXD
4	TXD
5	CTS
6	RTS

Pin 6   Pin 1

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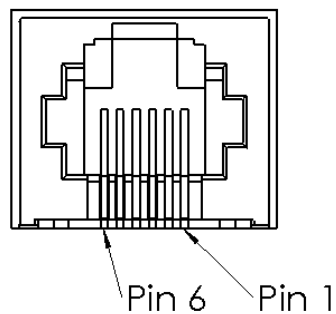
1.3.1.2.7 MDB Slave

iUP250 PINPad unit can be connected by MDB slave. The connector type is MDB 6 pins (Mini – Fit series 87827 (MOLEX)). iUP250 is powered on the MDB connectors by power supply 12 to 30V DC (30V is a maximum).

Pin N°	Function
1	Vin
2	GND
3	NC
4	MDBS_RXD
5	MDBS_TXD
6	MDBS_COMMUN
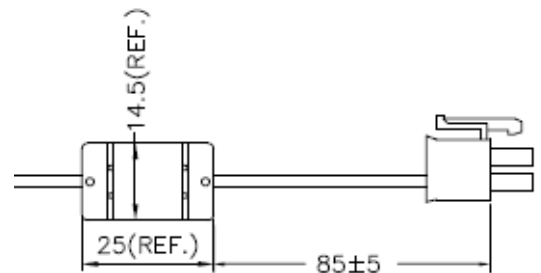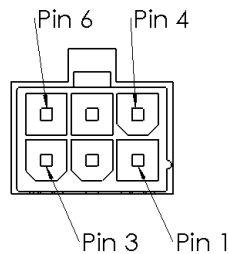
A ferrite B & F ELECTRONICS CO., LTD. ref MD-05-265C or equivalent must be added on the power cable.

1.3.1.2.8 MDB master (optional)

The iUP250 PINPad unit can be connected by MDB master if option available. The connector type is MDB master 8 pins (Mini – Fit series 87827 (MOLEX)).

iUP250 does not support EXE power supply. A ferrite Würth ref 74271222 or equivalent must be added with two turns on the cable.

Pin N°	Function
1	NC
2	NC
3	NC
4	NC
5	MDBM_RXD
6	ISO_GND
7	MDBM_TXD
8	ISO_GND

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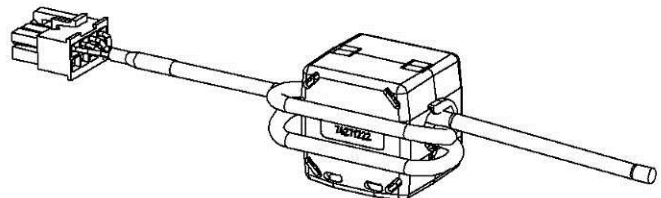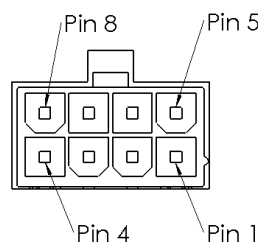
1.3.1.2.9 Pinshield light output

This connector is used to plug the pinshield with optional lighting.

Pin N°	Function	
1	5V	
2	HZ	Light off
	"0"	Light on

Pin 1
(center)
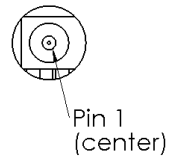
WARNING:
This DC Jack is only an
output power supply for the
Lighting pinshield.
Plugin a DC power could
damage the iUP250.
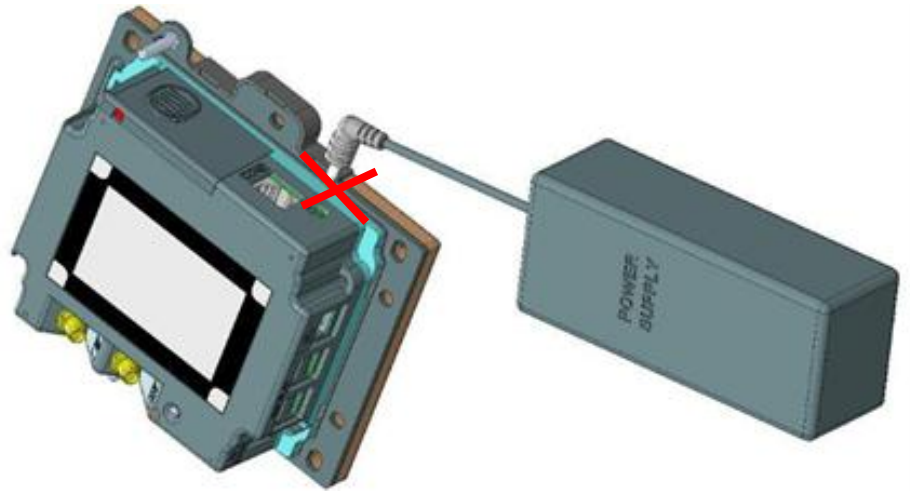
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1.3.1.2.10   Bluetooth (optional)

When the iUP250 is ordered with Bluetooth option, it must be connected to an external Bluetooth antenna.

Ingenico can provide an antenna, or a standard one can be used. This standard Antenna must have an impedance of 50 Ohm and a maximum gain of 0 dBi.

Ingenico recommended antennas:

Antenna type	manufacturer	model	gain	impedance	Minimum cable length	Ingenico Reference
bipolar	EAD	FBTS35024-SM-ST	0dBi	50ohm	0	192023282

<u>GPRS (optional)</u>

When the PINPad unit is provided with GPRS functionality (configuration upon request), the external antenna is not provided with the unit.

Ingenico can provide an antenna, or a standard one can be used. This standard Antenna must have an impedance of 50 Ohm and a maximum gain of 3.5 dBi.

The SIM used for GSM functionality must be assigned to SIM slot.

Ingenico recommended antennas:

Antenna type	manufacturer	model	gain	impedance	Minimum cable length	Ingenico Reference
bipolar	AMPHENOL	90-00234	1.7dBi	50ohm	0	179900131
bipolar	HIRSHMANN	MCA 18 90 MP	2.1dBi	50ohm	2.5m	189968573
bipolar	Giga concept	GC300M-011-2500	2.2dBi	50ohm	2.5m	189963487

1.3.1.3 SAM & µSD Installation

1. Disconnect the iUP250 from the main power supply.
2. Open the SAM door by removing the screw.
3. Insert the SAM cards in SAM slot 1 and /or slot 2
4. Insert µSD card in µSD slot
5. Insert SIM card in SIM slot.
6. Slide the SAM door and screw.

SAM slot 2

µSD card slot

SAM slot 1

SIM slot
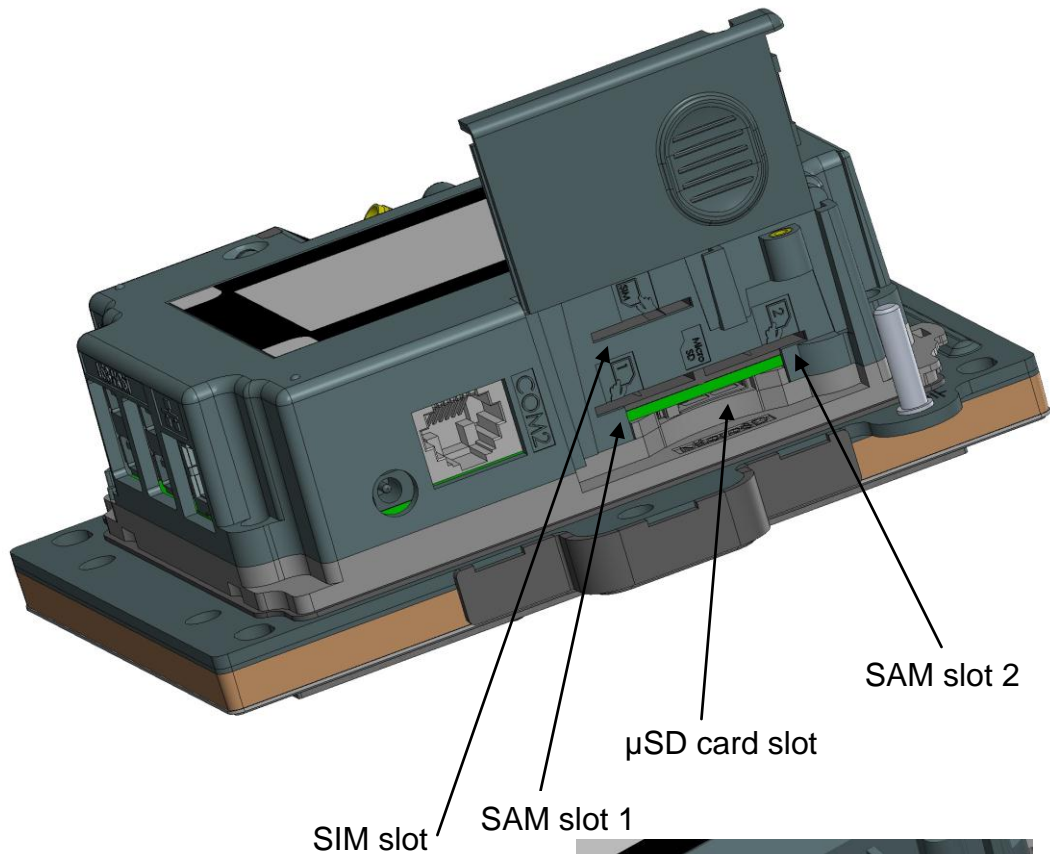
For SAM/SIM cards, take care of cards
orientation and do not push in excess the cards.
After insertion, the cards position is 4 mm
out of the products as shown on picture.

Cut angle
orientation
(SAMs)

Cut angle
orientation
(SIM)
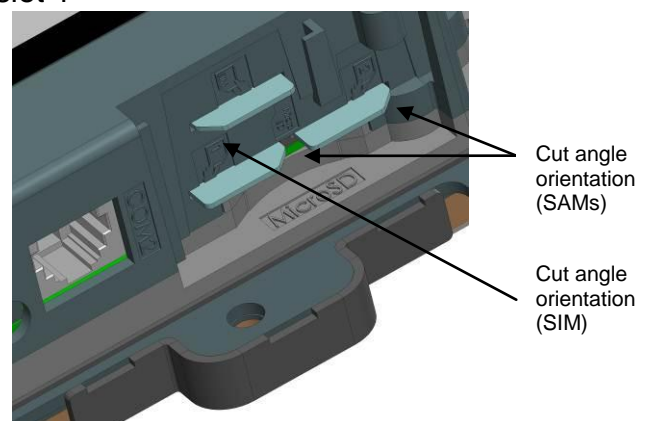
1.3.1.4 Buzzer

The buzzer is controlled by application. The frequency depends of software.

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1.3.1.5 RGB backlight

The iUP250 has a RGB backlight controlled by applications.
Red backlight is used to indicate the following priority information:
·	Red backlight on steady: product has been tampered (Key erased, irruption).
·	Red backlight flashing slowly: product is disabled (Keys erased, no irruption).
·	Red backlight flashing quickly: product is out of order (Commissioning needed).

1.3.1.6 Maintenance Button

The iUP250 has a maintenance button on the back.
-	To enter LLT mode, press the button at power up or at restart, until the red led lights on.
-	To enter Maintenance mode, press the button at power up or at restart, until the red led starts blinking.
-	To restart the product, press the button until the blue led lights on.

1.3.1.7 Cable Protection

A cable sealing sleeve is provided with iUP250 to protect the top of product against water runoff.

Connect the cables, and snap in the part on the rear cover to cover the cables.

This sleeve also holds the antenna tool for GPRS and BT options.

Cable sealing sleeve clipped on back cover

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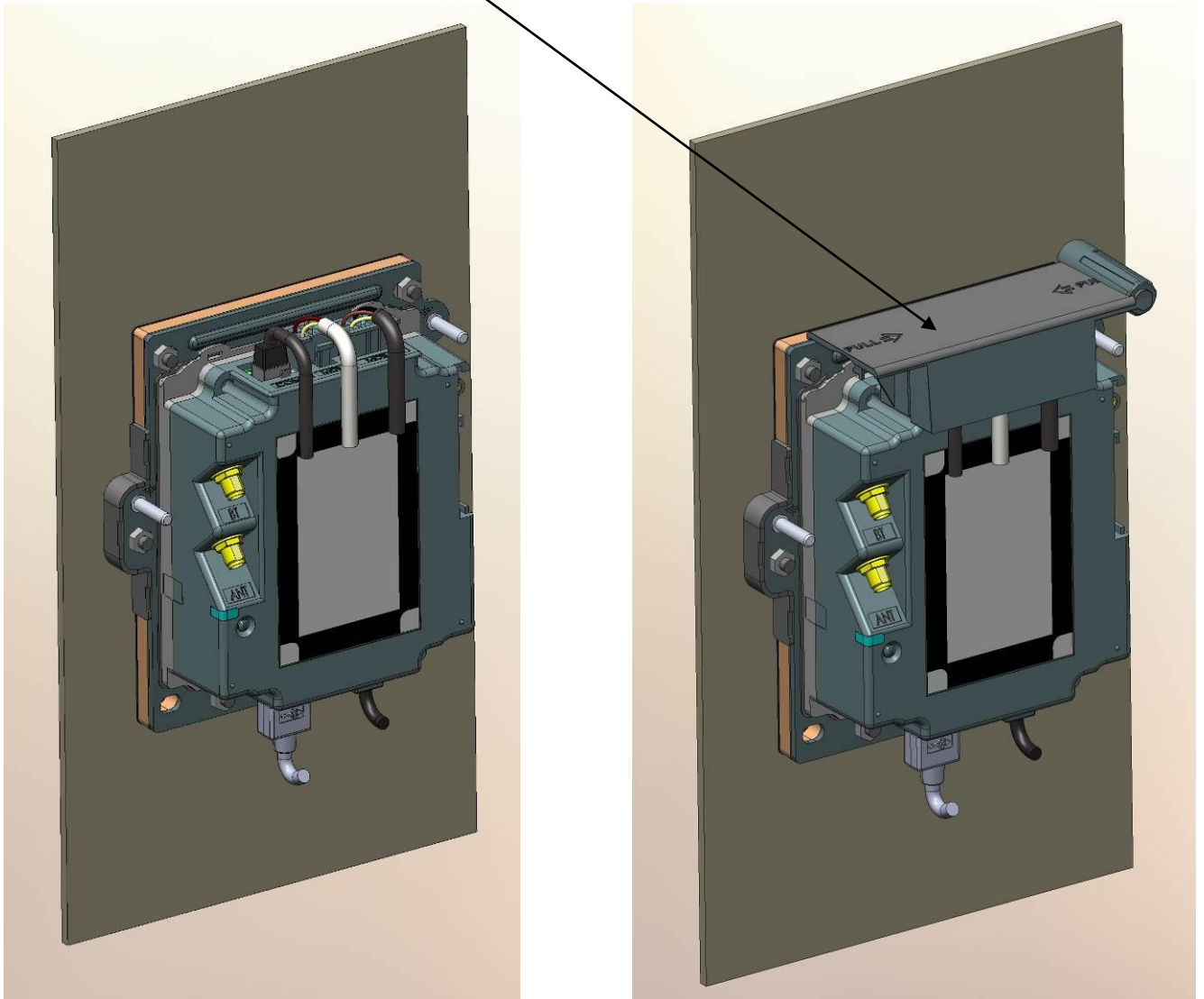
1.3.1.8 Antenna Installation

A tool is provided to help screwing the external antenna.
1. Remove the antenna tool from the cable sleeve.
2. Insert the SMA antenna cable through the slot of the antenna tool.
3. Slide the antenna tool over the SMA Cable connector.
4. Screw the cable.
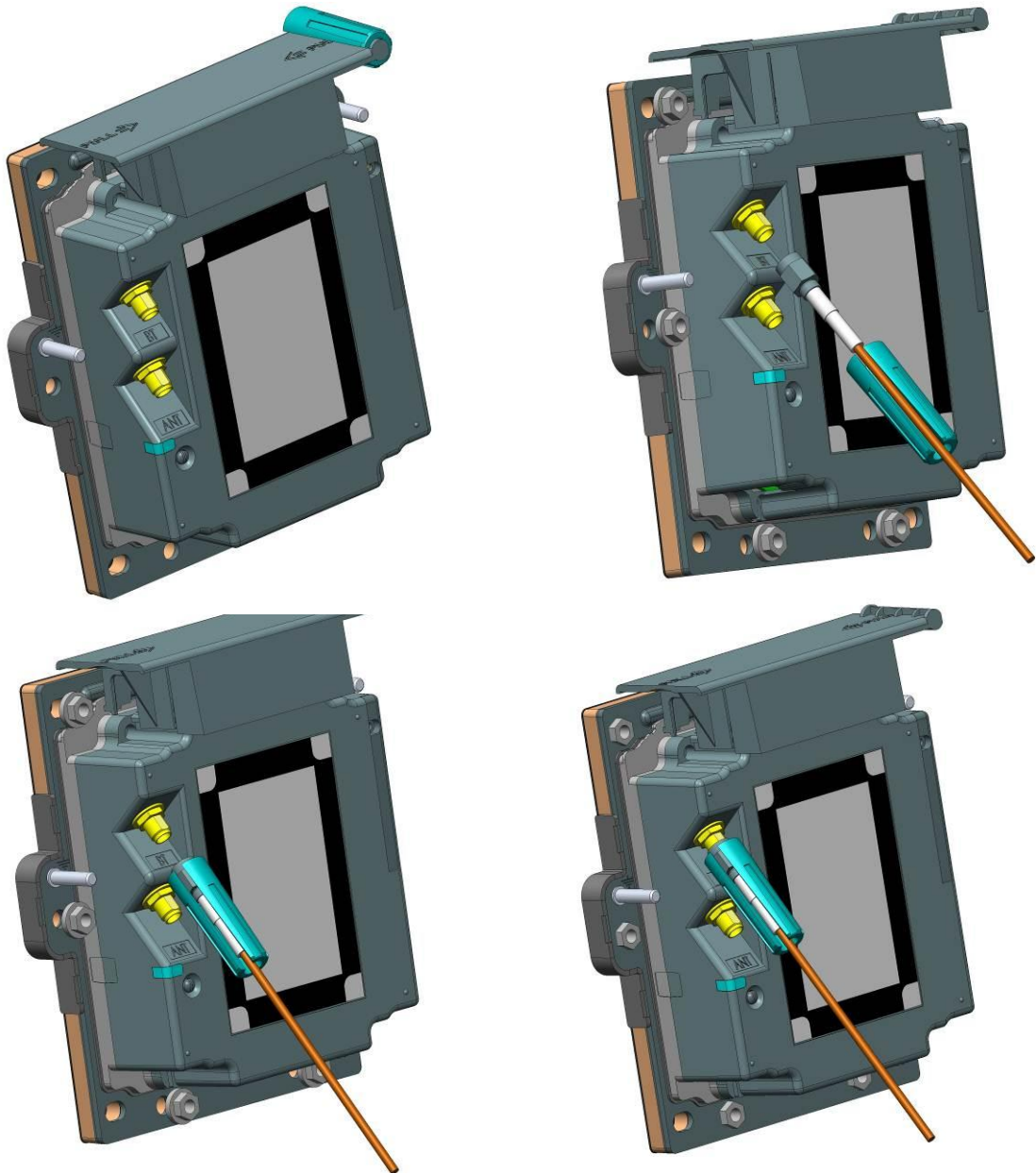
1.3.1.9 PINPad and Reader interconnectivity

Connection between the iUP250 and iUR250 is done through USB.
Plug the USB cable on iUP250 and iUR250 with a standard USB cable (not provided)
or with low profile Ingenico USB cable (spare part reference 29129367)

Warning :
iUP250 & iUR250 have to be grounded to respect IEC 60950.
The grounding connections must respect the following scheme.
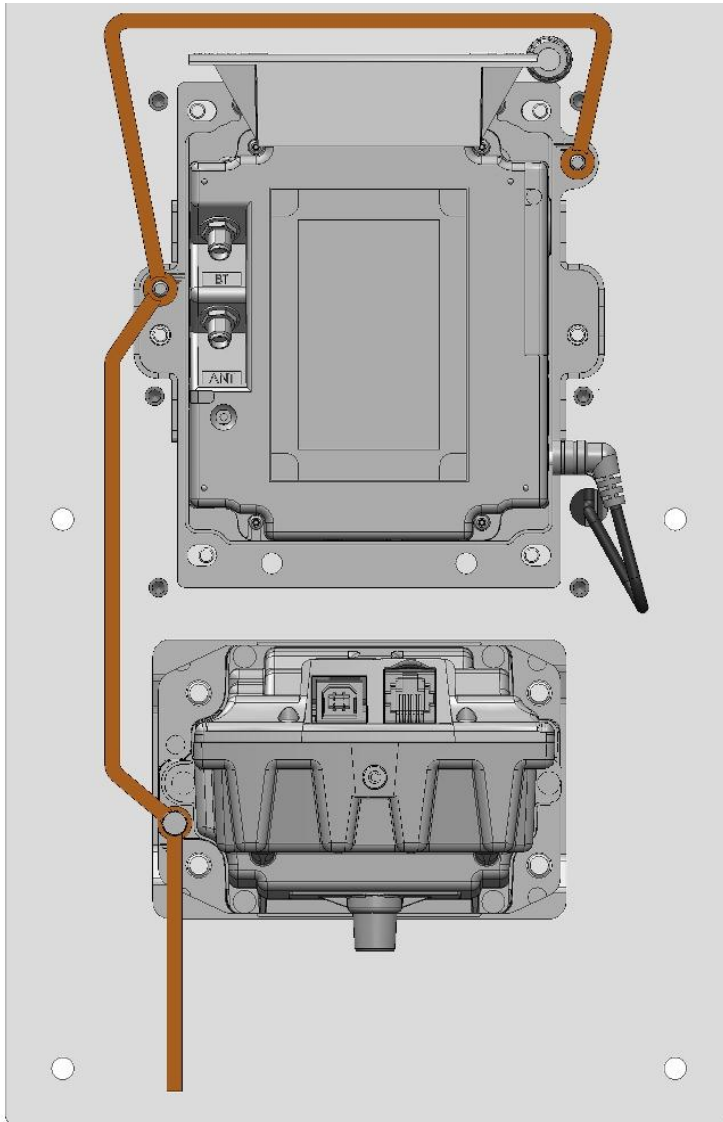
1.3.2 iUR250

Front view

Rear view

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1.3.2.1 Technical Hardware Characteristics

iUR250 technical characteristics:

Mass	700g without cable
Dimensions	148 x 108 x 73 mm (depth x width x height)

Operating conditions

Functional temperature	-20°C,+65°C
Max relative humidity	85% at 55°C, non-condensing
Fixing Tilt	iUR250 must be horizontally fixed or can be leaned up to 45° to evacuate water
Power Supply	USB 5V ⎓ 500 mA
Platform	Telium2
Card interface	EMV level 1 and ISO 7816 (read & write) T=0, T=1 and synchronous cards Magnetic stripe: ISO 1 /2 /3 (read only)
Functionality	Buzzer RGB led indicator Level lock (optional)
Link	USB device RS232 connection only for wake-up mechanism

Storage conditions

Storage temperature	-20°C,+65°C
Max relative humidity	85% at 55°C, non-condensing

1.3.2.2 iUR250 output connectors description

USB Device   Wake-up

1.3.2.2.1 USB device

iUR250 reader unit can be connected by type A USB.

1.3.2.2.2 Wake-up mechanism

iUR250 is design to save power thanks to a "stand-by mode".

To wake-up iUR250, insert a card or use Wake-up mechanism.
Pin 2 of COM0 link drive the wake-up mechanism.

Wake-up pin state	
Hz (high impedance)	Stand-by authorized
Drive to "0"	Wake-up / Stand-by unauthorized

The Wake-up pin is drive to "0" by the one asking the wake-up.
It could be driven by iUR250, iUP250 or any devices designed to be compliant (Host device…).
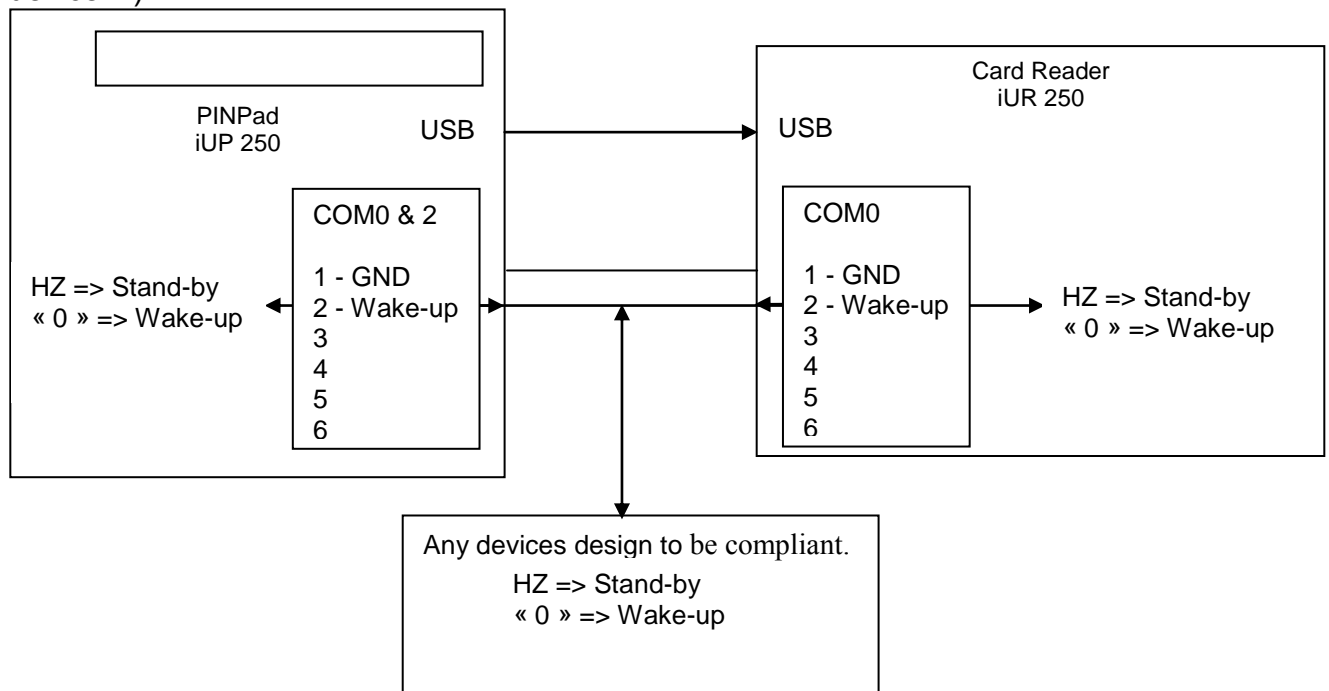
1.3.2.2.3 COM0 link

The IUR250 serial port COM0 is only available for debug feature and to manage wake-up mechanism. The connector type is RJ11.

Pin N°	Function
1	GND
2	Wake-up
3	RXD (Not for customer use)
4	TXD (Not for customer use)
5	CTS (Not for customer use)
6	RTS (Not for customer use)

Pin 6   Pin 1
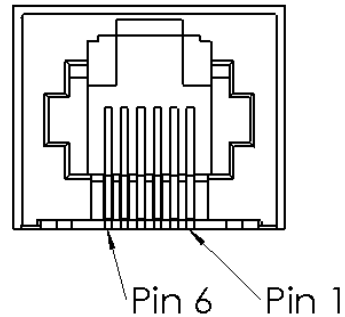
1.3.2.3 RGB Leds

The iUR250 contains RGB leds controlled by applications.

Red led is used to indicate the following priority information:
- Red led on steady: product has been tampered (Key erased, irruption).
- Red led flashing slowly: product is disabled (Keys erased, no irruption).
- Red led flashing quickly: product is out of order (Commissioning needed).

1.3.2.4 iUR250 Optional Lever Lock

The Lever lock is controlled by application.
It may be used to forbid the withdrawal of the card during chip access.

1.4 PROFESSIONAL INSTALLATION REQUIREMENT

Ingenico only sells its products, to qualified partners and integrators. They are in charge of professionally resell, integrate, and install these products inside complete solution for end customers.

These end customers solution can be:

- Petrol station.
- Ticketing kiosk (Airline tickets, cinema, transport, etc.)
- Vending machine operator
- Parking kiosk (On / off street)
- Other

Thus, the general public cannot purchase Ingenico hardware or software.

Partners, resellers, and Integrators must have qualified electronics engineers to be able to install or integrate our products. Furthermore, they must follow a specific technical training conducted by Ingenico technical experts.

In addition installation must follow Ingenico recommendations, as describe in this document, in order to respect:

- Local regulations for Electrical Safety and Radio emission levels
- Ferrite beam installation

Our field support & maintenance engineers are available for follow up and commissioning of installation.

2 MAIN ACCESSORIES

2.1.1 Generality

For a complete description of Ingenico Accessories, please refer to iUN accessories catalog.

2.1.2 Optional PINPad-to-Reader USB cable

The interconnection between the iUR250 and iUP250 is done with a standard USB cable.

An optional USB cable with short right-angle overmolded connectors can be purchased as an accessory. This cable is designed to optimize the required volume for iUR250 & iUP250 installation in the kiosk.
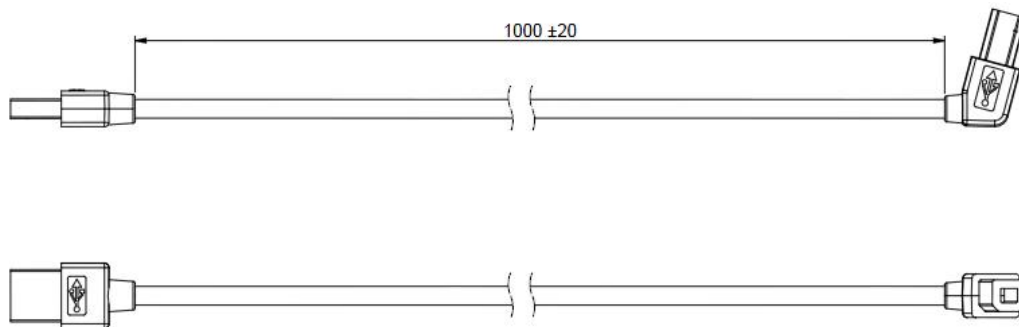
2.1.3 iUP250 Power supply

Ingenico power supply can be ordered under reference 192017549 (only for 0 to 40°C use)
Input: Main voltage supply ranging from 100V to 240V
Maximum current of 3A
Working frequency range between 47Hz and 63Hz
Output: Regulated DC voltage 12V

2.1.4 Stand-by management cable

Under definition, specification available on demand.

2.1.5 Optional Pinshield

Designed specifically for the iUP250, optional privacy shield is compliant with EPC343-08.
There are 2 optional privacy shields: standard (no light) and lighting.

Standard pinshield
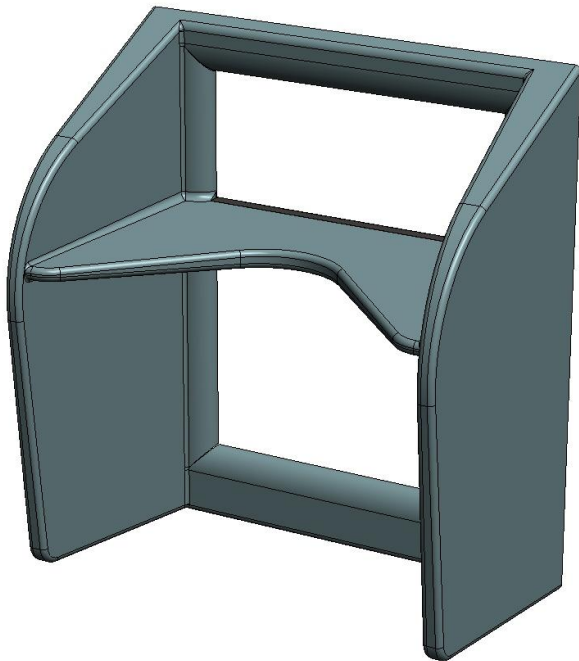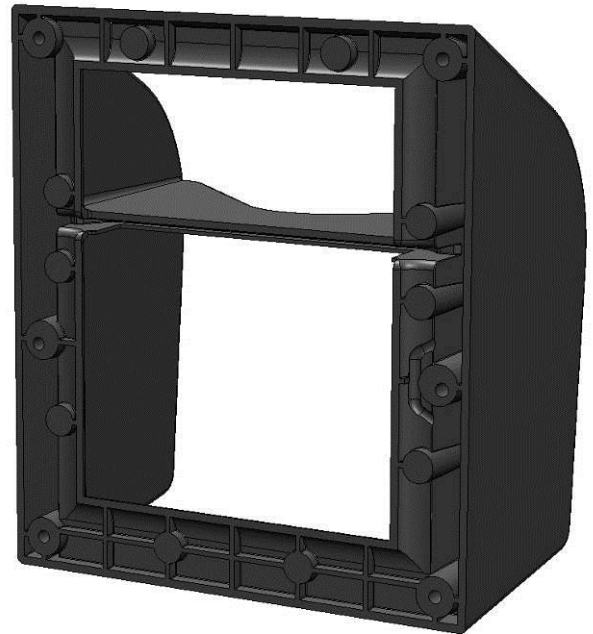
Front view   *Rear view*

Lighting pinshield

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126

74,5

143
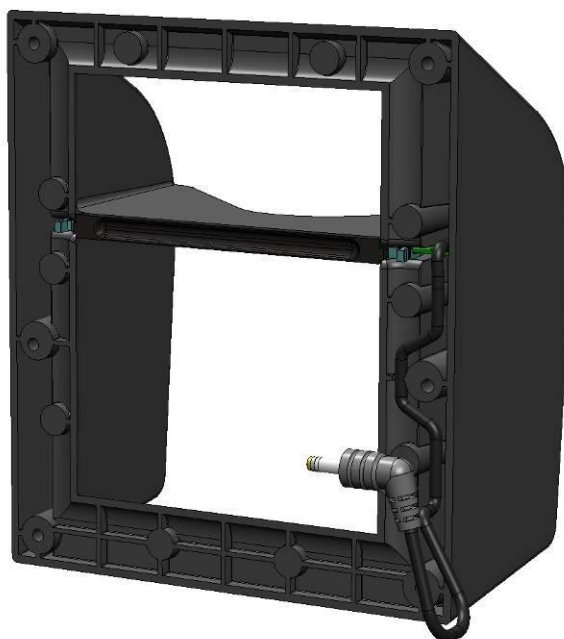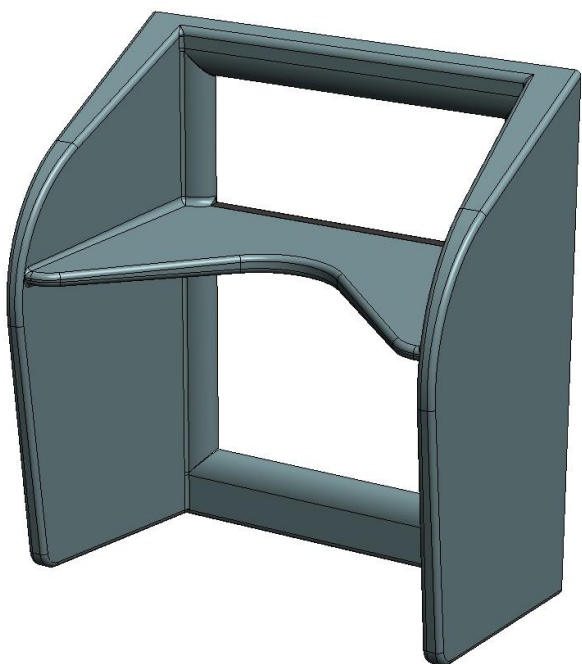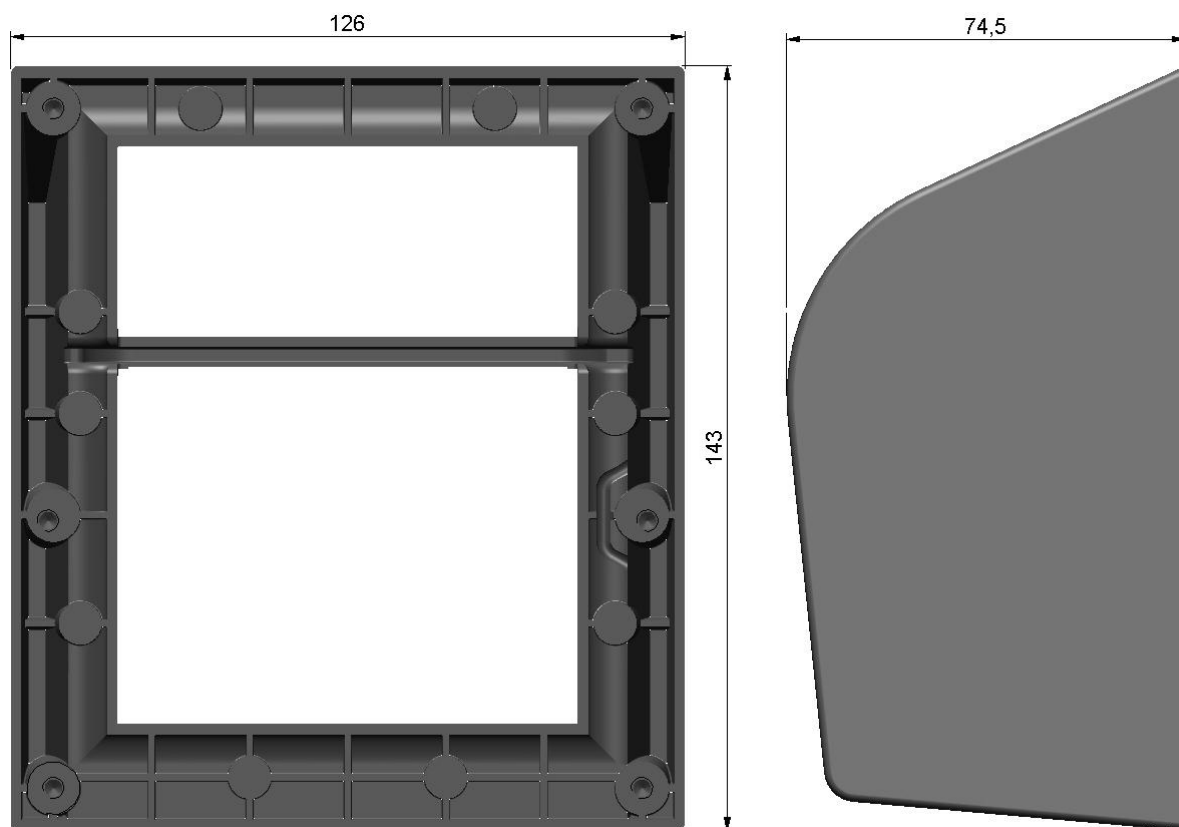
Dimensions of the pinshield

3 SOFTWARE

3.1 IUP250

The system unit, equipped with Telium2® technology, is designed with a

structure supporting several applications without any mutual interference.

The operating system is a multi-task, real time, preemptive system.

The inputs and outputs are managed by interrupts.

This provides for simultaneous processing of peripherals, thus increasing

system unit performance.

It is downloadable to FLASH memory.

3.1.1 Software Architecture

Power up

Bootstrap

Resident loading

System

Operating system

Local loading

| | | SAM | Key pad | Display | μSD | Me mory | USB |

Telium manager

Application manager

Local diagno...

Remote diagnostics

Downloading

UCMC

UCM component

Applications

CB Appli

Appli 2

Appli 3

Appli n

Transaction Flow Management

USB slave/ PSU 5V

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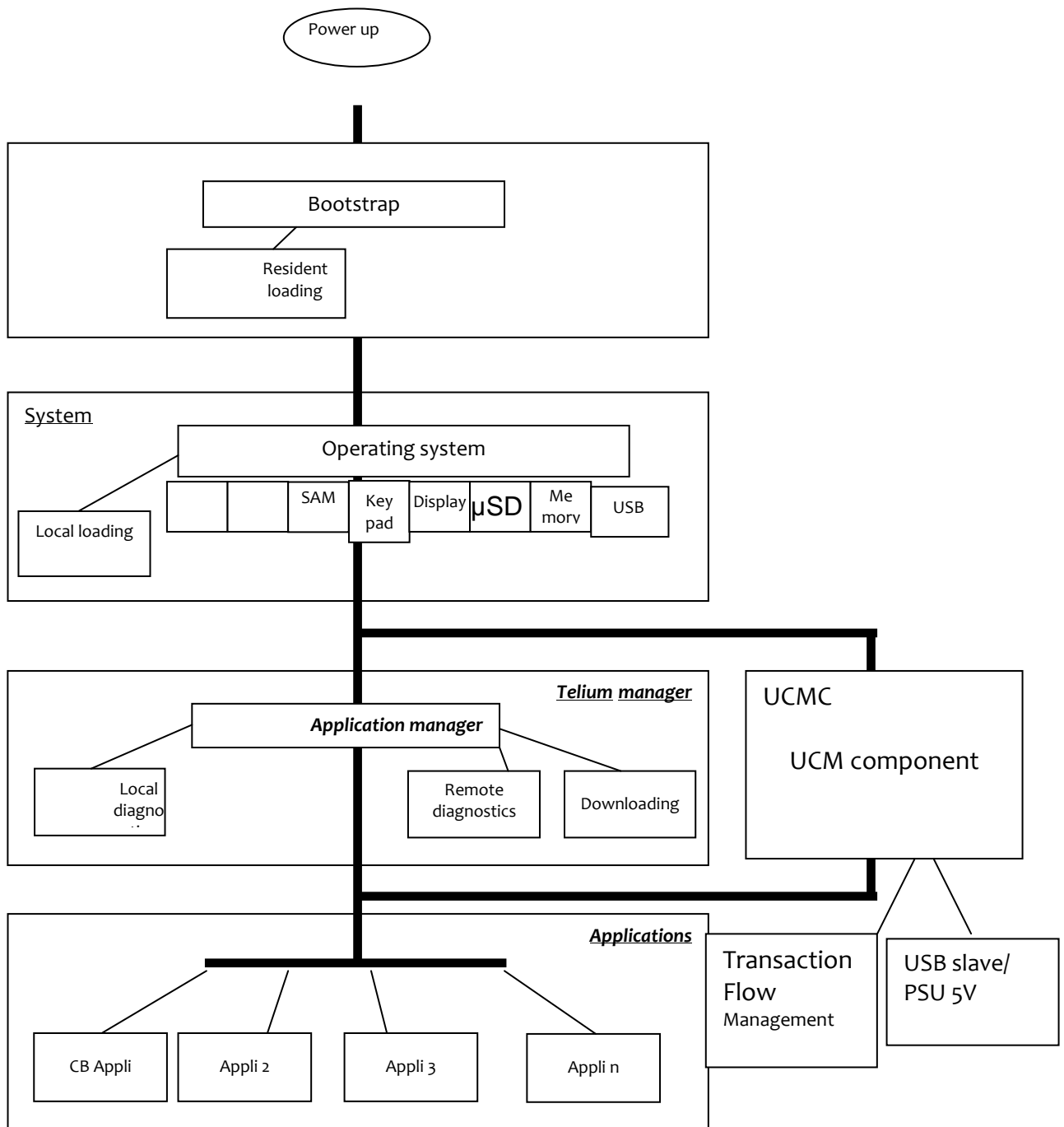
The software architecture is divided into four levels:
- System
- Multi-application manager
- Universal Controller Module Component (UCMC)
- Independent applications

The system manages access to all the terminal's peripherals. Access is achieved through standard C primitives for all the input/output peripherals (keypad…) and through specific primitives for the other peripherals (smart cards and magnetic stripe cards). Further, the system takes charge of memory management. It allocates memory space to the software applications and access control.

The multi-application manager is the entity, which calls the various applications downloaded in the terminal in response to the various events that occur in the terminal.

The UCMC component interfaces between the applications and the peripherals (PINPad, Reader, Printer…). This makes the applications independent of the peripherals.
It can also manage the « transaction flow ».

The applications are modeled around the demands made by the multi-application manager. Each request or input point represents a processing operation to be performed. Each application manages the execution of these processing operations according to its specifications. This standardization based on input points simplifies the implementation of the applications on terminals. The terminal provides natural access to the modularity concepts and improves the maintainability and quality of the applications.

3.1.2 Secure management of software

The terminal is designed to execute authentic software only and to do this in a ranked context.

The terminal performs the following checks:

1. During a software download, the terminal checks :
   - Its authenticity, by checking its signature with the RSA algorithm with a 2048 bit key.
2. Before running a software, the terminal checks :
   - Its presence by looking for the software's identity.
   - Its integrity by checking checksums and CRCs.

3.1.3 Operating system

Bootstrap

Bootstrap is resident.

The bootstrap very briefly takes control of the terminal after each power up to perform the initialization and the self-test. Then, it automatically runs the operating system, which in turn starts the applications manager.

Thus, the Bootstrap provides the following functionalities:
- Memory and checksum self-test
- Local download of the operating system if absent
- Operating system authenticity check and start-up.

Operating system characteristics

The operating system is downloaded (locally or remotely) into the memory. It is upgradeable. After a few fractions of a second following a power-up, the operating system takes control. It checks the presence, integrity and authenticity of the system components and application software present in the terminal.

The maintenance sub-system takes control in the following cases:
- if no authentic application is present,
- or, if a manual action is made by the operator during power up,
- or, if it is activated by an application.

The maintenance sub-system ensures, among other things, the downloading of the application software.

The operating system ensures the start of the multi-task core and then runs the applications by making a set of services available to them:

- Multi-task management: Availability of a pre-emptive real-time environment, based on interruptions, events and mailboxes. This management enables simultaneous processing, which improves the terminal's performance.
- Input/Output management: This is carried out under interruptions, generally in buffered mode. Thus, the application developer enters a "conventional" C context.
- System alarm management: Certain incidents (e.g. swipe card reading error) detected by the operating system are recorded. They can be used later by the maintenance sub-system during remote or local diagnostics.
- Application alarm management: A number of incidents detected by the applications can be saved by the operating system at their request. This recording is used later as in the case of system alarms.
- Application isolation management: The operating system provides the mechanisms described in the section on software isolation and memory protection.
  Inter-application isolation is managed by the Memory Management Unit (MMU).
- Application download management : The operating system offers the downloading services described in the « Software download » section.

3.1.4 TELIUM MANAGER

The main functions offered by the manager are the following:
- Application management
- Terminal initialization
- Terminal maintenance
- Card Recognition and routing to the applications

When the EMV DC module is present, it selects the applications:
- EMV applications (EMV level 2 compliant)
- Non-EMV applications

In France, it is compatible with the following environments
- Health system
- French banking system
- "Private applications"

Terminal initialization

Required operating conditions

To operate, the system unit has to be equipped with its system, the application manager, the UCMC and at least one application.

If no application is initialized, the application manager displays a message requesting initialization for an application (in maintenance mode).

If at least one application is initialized, the terminal is operational. The application manager then waits for an event to poll the applications loaded in the terminal.

Initialisation of common parameters (in maintenance mode)

The application manager is used to initialize the common parameters:

Date, time, message display language, IP network configuration data, local loading or remote diagnostics.

System unit maintenance (in maintenance mode)

The system unit has maintenance functions.
- Properties
- Local downloading
- Diagnostics

Properties

The properties function is used to obtain the following information:
- List of applications loaded in terminal, version number, checksum, etc. The application manager gives this information for itself and for the operating system.
- Application call time: remote collection, loading, etc.
- Total number of transactions in each application file contained in system unit.

Download

The downloading function uses the information supplied on initialization of the application manager.

The program update function is used to update the system unit by:
- Using a special local loading tool connected to the terminal,
- Using a remote loading tool,
- Using a USB key. The iUP250 must be in maintenance mode with a USB key containing the software to load plugged in. Then, launch the download by using the manager menu

Diagnostics

The diagnostics function is used for:
- Local diagnostics (in maintenance mode)
  The operator can request the incidents or alarms stored in the terminal.

  The storage function implements two sets of elements:
  - Incident counters: Used for « repetitive » incidents, for which only the number of occurrences is significant. For example, number of incorrect swipe reads.

  - Events: Exceptional in nature. The information content depends on the type of incident. Generally, this comprises the date, time and information relative to the incident itself. The events are stored in a rotating file where the most recent events are kept.

- Remote diagnostics
  This function is used by the operator to trigger a call to a server to dump the information stored in the terminal. The server thus enriches a database by which it can efficiently monitor a terminal population, or propose services such as preventive maintenance, operating statistics, etc.

- Diagnostics by USB key
  Diagnostic files are copied to a USB key if present at start-up.

3.1.5 Software downloading

Downloading

The software can be downloaded:

- Locally via the serial link (COM or USB).
- Remotely, via the switched telephone network (PSTN) using an external modem, Ethernet, GPRS, TCP/IP network.
- By a USB key. The iUP250 must be in maintenance mode with a USB key containing the software to load plugged in. Then, launch the download by using the manager menu.

The techniques used:

- Data compression,
- Authenticity checking,
- Memory allocation management,
- TCP/IP,

best optimize the software downloading operations.

These features provide faster downloading time, enhanced security, an ease in upgrading, and a larger number of software installed on the system unit.

Local Loading Tool (LLT)

The LLT is used for local software download.

The LLT is formed by:
- A PC running with Windows Seven, Vista Pro, XP, 2003 Server, 2000 Professional SP2
- A INGENICO loading software,
- A PC-terminal connecting cable

Local loading is performed:
- From a PC equipped with the Local Loading Tool (LLT) on the COM serial or slave USB link
- By automatic switching to the local loader of the operating system.

Two connections are possible:
- By COM link: Speed 115200 bits/s
- By slave USB link: Speed 8 Mbits/s approx.

Selection of the software to be loaded is guided on the PC screen by an Explorer type Windows system (Windows loader).

Loading time for a 1Mo application is 4s by USB port.

Loading by USB key

With the USB key loading method, the software is loaded locally with no need for a PC type tool.

The loading time is identical to that of the USB.

Terminal Management Server (TMS)

For a complete description of the TMS possibilities, refer to the "TMS" section.

Loading and management of memory space in system unit

Before a (down)load, the system ensures that the necessary memory space is available.

The software (possibly compressed) are downloaded to flash.

If software is deleted, the system frees the space. If software is upgraded, the system loads the new software, checks it, and deletes the old version.

The entire memory area is used and is usable. No area is reserved for upgrades.

On start-up of the terminal (power up or reset), the applications are decompressed and the code is copied to RAM.

Improved software downloading

Includes the following characteristics:

Softwares are loaded by FTP TCP/IP and PPP for optimized loading.

- Downloading performance in V32bis is around 14, 4 kbps on the original files.
- Once the connection is set up with the V32bis modem, a 120 Kbytes application is downloaded in around 1 minute.
- Automatic dialling and access to downloading server by switched telephone network (STN) - with an external modem - using a public PAD or private PAD access.
- Downloading can be performed in IP mode via Ethernet via a secure channel (SSL).
- Data is compressed in accordance with an algorithm derived from the Lempel-Ziv method ensuring compression rates of the order of 40 %.
- For downloading, only the improved application will be downloaded.
  This management function is handled by the system unit itself and not by the remote server, providing enhanced functional security in a multiple source loading context.
- Recovery management in the event of loss of communication. This service resumes the downloading which has been interrupted at the exact location where the interruption took place, so that only the missing portion is downloaded when the communication is recovered.

The downloaded software is run in a secure context by authenticity check.

Downloading Starting

The downloading can be requested:

- Using the application manager on maintainer request. This is the case, in particular, where a program upgrade is concerned or when a new software is added in the terminal memory. In this case, the procedure is simplified to the utmost.

The user triggers the call from the application manager by choosing the upgrade function in the menus and using the dialogue keys. Connection to the server takes place automatically.

For an upgrade, the user has nothing to enter.
To request a new software, the user is guided on the screen in making his choice. The identity of the business is not requested. The identity stored in the system unit is automatically transmitted to the server.

- Using the application software on request by the center or merchant (Example: in France, by « envelopes").
  In this case, downloading takes place entirely automatically. The downloading ticket informs the merchant.

Local loading procedure on iUP250:

- Trigger the LLT software on the PC.
- Switch off the iUP250.
- Connect the PC to the COM or slave USB connector of the iUP250
- Press the rear button.
- Switch on the iUP250.
- When the led near the button becomes fix red, release the button. "LLT" text is now displayed on screen.
- Trigger the LLT and follow the instructions given in the « LLT User's guide v4 » to load the software.

The parameter definition files must be placed in the "HOST" directory.

3.1.6 Development station

Introduction

With this development station, it is possible to develop application software for the entire range of iUN products.

The software is written in high level C language in a multi-application environment. Ingenico provides the complete set of software and the equipment required for development. This also includes the documentations. Training sessions can also be proposed.

Required Configuration

The development station executes on a Pentium PC running under Windows 2000/XP/Vista/Seven.

Development tools for ARM such as a cross-compiler are required. These comprise:
- A C compiler (GNU), an assembler and a link editor for ARM and Thumb,
- A development environment,
- A remote debugger.

Supply

The SDK 30 development station comprises:

- The user license for the M²OS software which includes:
  - The operating system,
  - The application manager,
  - The libraries
  - The associated documentation in PDF format
- The user license for the Software Authentication Tool (SAT) software,
- The user license for the Local Loading Tool (LLT),
- The card reader and the RSA cards used to sign the applications.

SDK + Add On Unattended

For iUP250 + iUR250: minimum configuration SDK 9.2 and Add-On Unattended 3.1 are required

Associated services

- Training
Development of applications on iUN
Duration: 1 day
Location: R&D center.

- Pre-requisites for training:
A good understanding of the C language is required. Familiarity with firmware can be useful.

- Technical support
Duration: 6 months after the training
This includes the hot line, and updates to the documentations and softwares during this period.

- Software package
A set of software packages, used to simplify development of applications (EMV level 2, contactless…) is available.

3.2   IUR250

The reader has a software architecture enabling execution of schemes (an authentic program which handles secret data and manages PIN code entry) without interfering with the operating system program.

By the preemptive and multitask features of the real time system and the interrupt method for input / output handling, simultaneous management of all the peripherals is ensured, enhancing PINPad performance.
Data can be loaded in the internal flash memory of the processor.

3.2.1 Software architecture
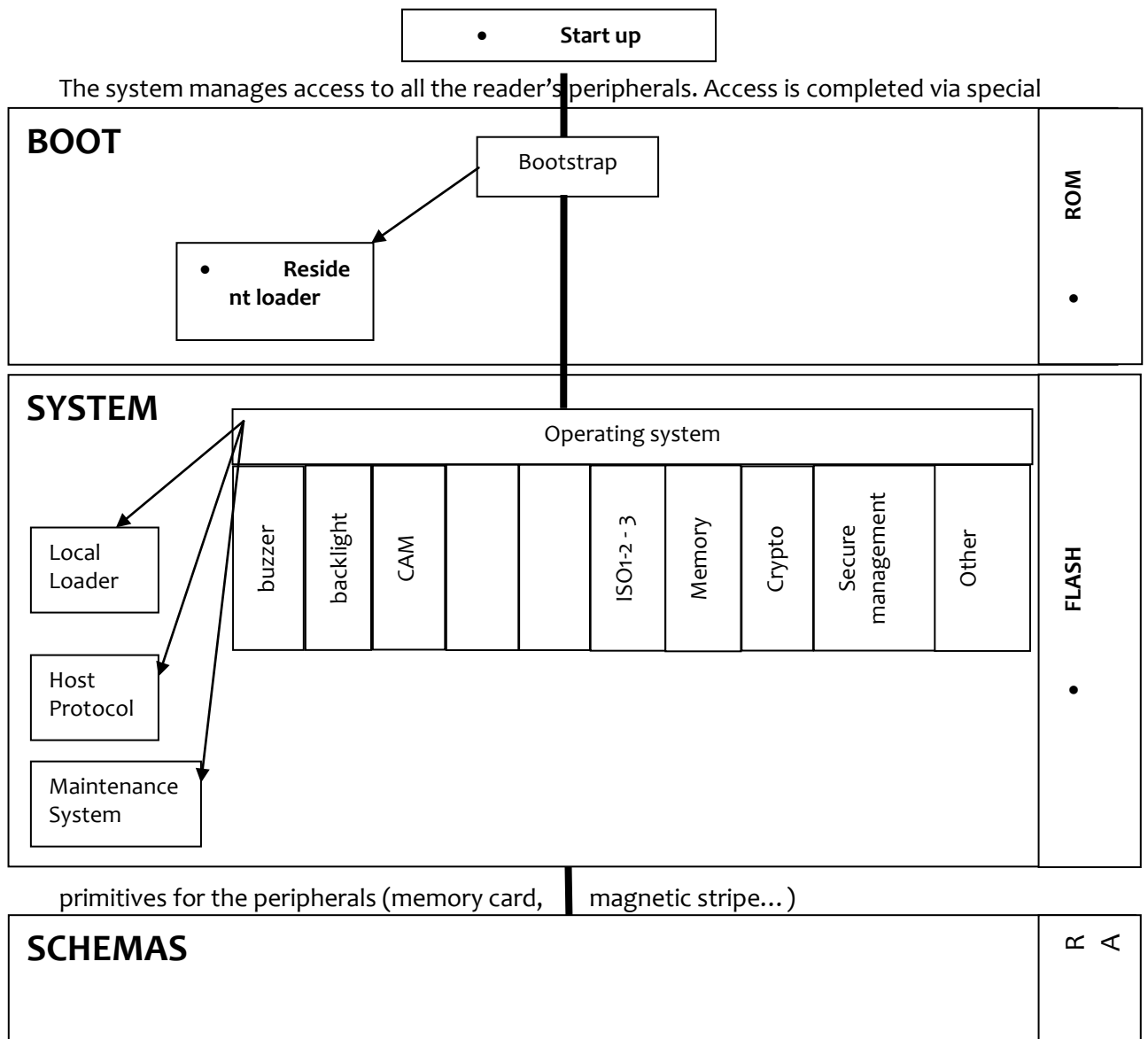
The system manages access to all the reader's peripherals. Access is completed via special

BOOT

ROM

Start up

Bootstrap

Resident loader

SYSTEM

FLASH

Operating system

Local Loader

Host Protocol

Maintenance System

buzzer | backlight | CAM | | ISO1-2 - 3 | Memory | Crypto | Secure management | Other

primitives for the peripherals (memory card, magnetic stripe...)

SCHEMAS

R A

Further, the system takes charge of memory management. It allocates memory space to the software applications and controls access.

3.2.2 Software security management

iUR250 is designed so that only authenticated software can be run in a ranked context.

iUR250 checks the authenticity of the software by checking its signature with the RSA algorithm with 2048 bits key size.

3.2.3 Operating system

Bootstrap

Bootstrap is resident.

The bootstrap very briefly takes control of the terminal following each powering up to perform the initialization and the self-test. Then, it automatically runs the OS, which in turn starts the applications manager.
Thus, the bootstrap provides the following functionalities:
- Local download if the OS is absent;
- OS authenticity check and start-up.

Operating system (OS) characteristics

The OS is downloaded (locally or remotely) into the memory. It is upgradeable. After a few fractions of a second following powering up, it takes control. It checks the presence, integrity and authenticity of the system components and application present in the terminal.

The maintenance subsystem takes control in the following cases:
- if a manual action by the operator is made when powering up;
- Or if it is activated by application.

The maintenance subsystem ensures, among other things, the downloading of the applications.

The OS ensures the start of the multitask core and then runs of the application by making a set of services available to them:

- Multi-task management: Availability of a pre-emptive real-time environment, based on interruptions, events and mail boxes. This management enables simultaneous processing, which improves the terminal's performance.

- Input/output management: This is carried out under interruptions, generally in buffered mode. Thus, the applications developer enters a "conventional" C context.

- System alarms management: Certain incidents detected by the OS are recorded. They can be used later by the maintenance subsystem during remote or local diagnostics.

- Tamper proof Application / System management: the operating system offers the devices described in the data security section.

4 TERMINAL MANAGEMENT SYSTEM

4.1 INTRODUCTION

Ingenico developed its own Terminal Estate Management System called IngEstate. It is a link between an organisation with an estate of payment terminals and their merchants. It allows users to remotely manage payment terminals, modify their software content and interact with merchants.

4.2 BASIC FUNCTIONS

The basic functions are:
- be able to locally download software on a terminal using a direct cable link (usually RS232);
- be able to remotely download software on a particular terminal using modems and IP connections;
- be able to remotely download applications and configuration updates to a large estate of terminals;
- be able to upload terminal configurations and check software status;
- Be able to inform merchants when terminals are out of use during maintenance periods.

4.3 ADVANCED FUNCTIONS

The advanced functions are extremely various, with new ones being requested frequently:
- draw statistics and reports about terminal configurations;
- optimise automatic call scheduling/download balancing for large estates of terminals;
- be able to display written messages on the terminal, using the display or the printer;
- be able to easily configure a complete terminal (i.e. several applications) and to download it in one operation;
- be able to analyse the status of terminal software and do only delta downloads (i.e. only the parts that are damaged or need updates);
- be able to download to either a Peripheral or a terminal when connected;
- Customise the system easily;
- Integrate with systems such as SAP easily;
- … and many others.

4.4 CUSTOMERS SAVINGS WITH INGENICO TMS SOLUTION

The most obvious cost saving is not having to send a technician to service the terminal at the merchant location. Many other costs savings are derived from the ability to have a "clean" estate; better diagnostics and remote software repairs mean less shipping of replacement terminals, less downtime, less mail and phone communication costs, more efficient update campaigns, etc.

5 INSTALLATION PROCEDURE IN KIOSKS

Note: It is required to use **ESD-protective clothing** while handling these devices.

5.1 SECURITY REQUIREMENT

The integration must be done to be compliant with PCI requirement.

Payment Card Industry – PIN Transaction Security (PTS) - Modular Derived Test Requirements Version 3.1 October 2011

Positioning of IUP250 on the unattended device must be in such way as to make keypad spying difficult (according to PCI PTS - Modular Derived Test Requirements Version 3.1 October 2011).
 If the unattended device doesn't provide such protection, an Ingenico privacy shield option can be provided.

iUP250 and iUR250 must be mounted on the unattended machine as indicated in the installation guide to activate removal detector.

CAUTION
NEVER ask the customer to divulge their PIN Code. Customers should be advised to ensure that they are not being overlooked when entering their PIN Code.

5.2 KIOSK MECHANICAL REQUIREMENTS

The kiosk panel can be metallic or plastic.
The kiosk panel can be coated with painting but grounding of iUN modules must be insured.
The kiosk panel thickness must be between 2 mm and 5 mm.

5.3 GENERAL INSTALLATION RECOMMENDATIONS

Installation requirements:
 * Ensure that you have enough free space for installation, operational and maintenance needs.
 * Be aware of the safety regulations.
 * Carefully consider the general and local payment security requirements and any impact they may have on the kiosk
 * Carefully consider the ergonomic aspects and also the local acts or recommendations concerning disabled and visually impaired people.
See environmental specification and especially in case of very cold or humid weather, take steps to ensure that the internal temperature is at least -20 °C.

5.4 KIOSK SUGGESTED LAYOUTS FOR IUR250 IUP250

In order to save space, keep good ergonomics and relative protection from environment, we recommend the following configurations.

5.4.1 Vertical PINPad above the reader

This is the most common layout and simplest installation.
Minimum distance between reader and PINPad is 23 mm.

23 mm
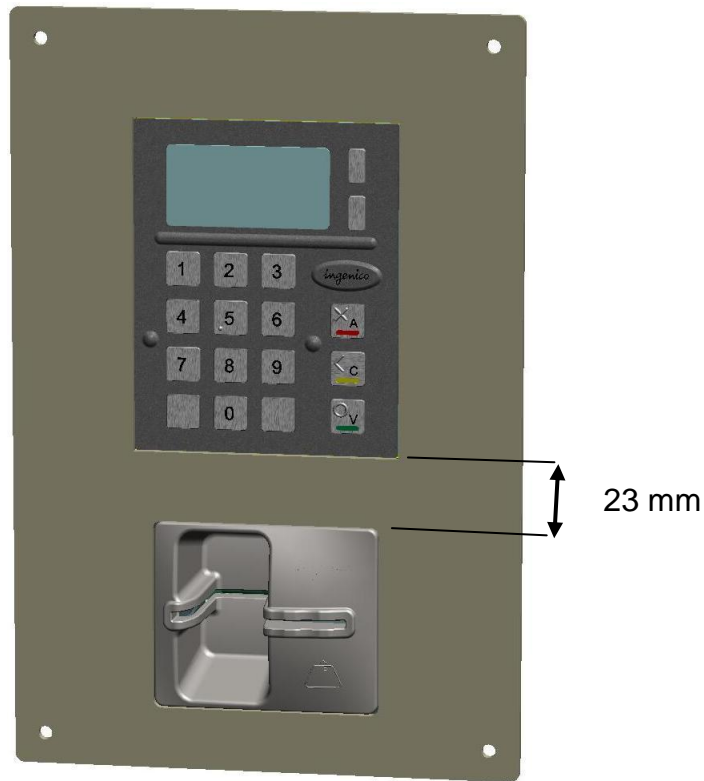
5.4.2 Leaned backward PINPad above vertical reader

This installation provides a good ergonomic integration.

Maximum leaning of the keypad is 30 degrees.
Minimum distance between reader and PINPad is 25mm for cable access.

5.4.3 Leaned forward reader above leaned backward PINPad

The reader must be Horizontal or 45° max leaned in order to evacuate liquids by the front.
Maximum backward leaning of the keypad is 30 degrees.

5.4.4 Optional pinshield layout considerations

An optional pinshield can be installed. It is mandatory that the PINPad is installed vertical directly on the front face of kiosk (not in recess).

5.5 KIOSK WATER INGRESS CONSIDERATION

Components inside the kiosk should take care of water ingress and water collection to avoid pouring water on the product below.

5.6 KIOSK COOLING CONSIDERATION

In case of forced cooling, air intake from the card reader opening is forbidden as it will fill the reader with dust. A large air intake must be provided in the kiosk.
It is also recommended to have the kiosk in overpressure to avoid dust.

5.7 KIOSK GROUNDING CONSIDERATION

All parts of the kiosk should be connected to the ground using ground cables.

Connect to Ground
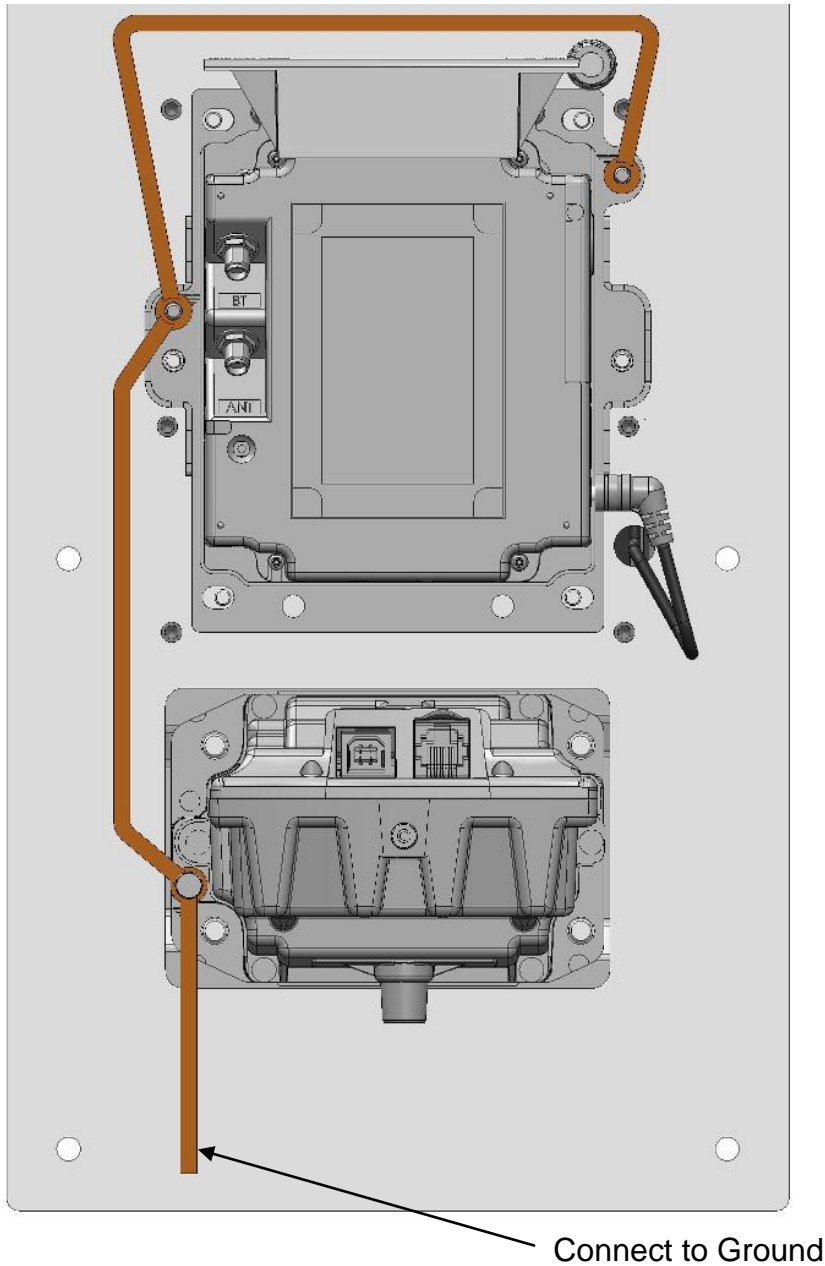
6 ASSEMBLY PROCEDURE FOR IUR250 CARD READER

6.1 KIOSK MINIMUM VOLUME FOR IUR 250

The iUR250 requires a minimum volume inside the kiosk. It is detailed in the drawing below.
3D design on demand.
The minimum volume is 108 mm width x 73 mm height x 146 mm deep.
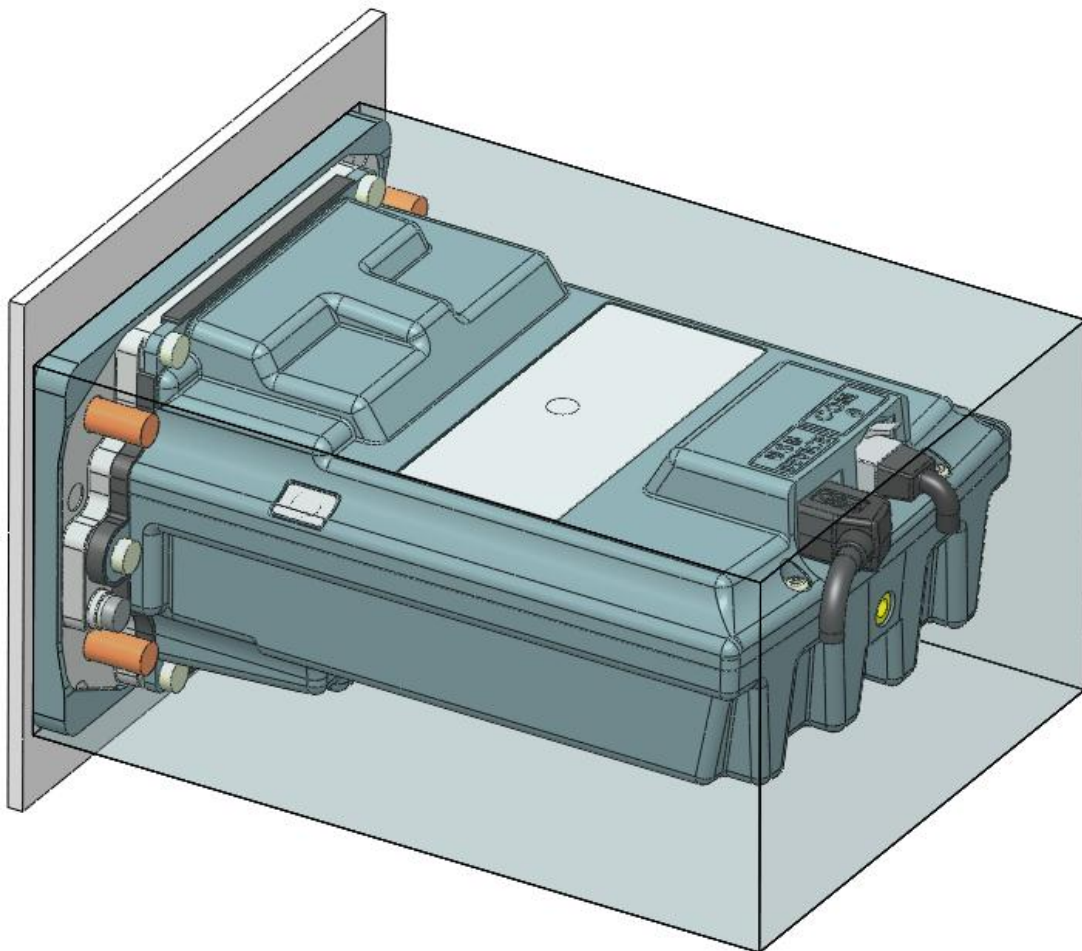
Picture of iUR250 minimum volume

6.2 KIOSK PREPARATION FOR IUR250 INSTALLATION

The iUR250 requires a cut out in the kiosk (dimensions in millimetres detailed in the diagram below).

CAUTION:
The equivalent iUR250 hatched footprint surface on the kiosk must be flat and clear of any holes and burrs.
Special attention is required for the area of anti-removal switches.

Fixing must be done by 4 M4 to M6 x12mm welded studs.

iUR250 footprint area

iUR250 Anti-removal switches area
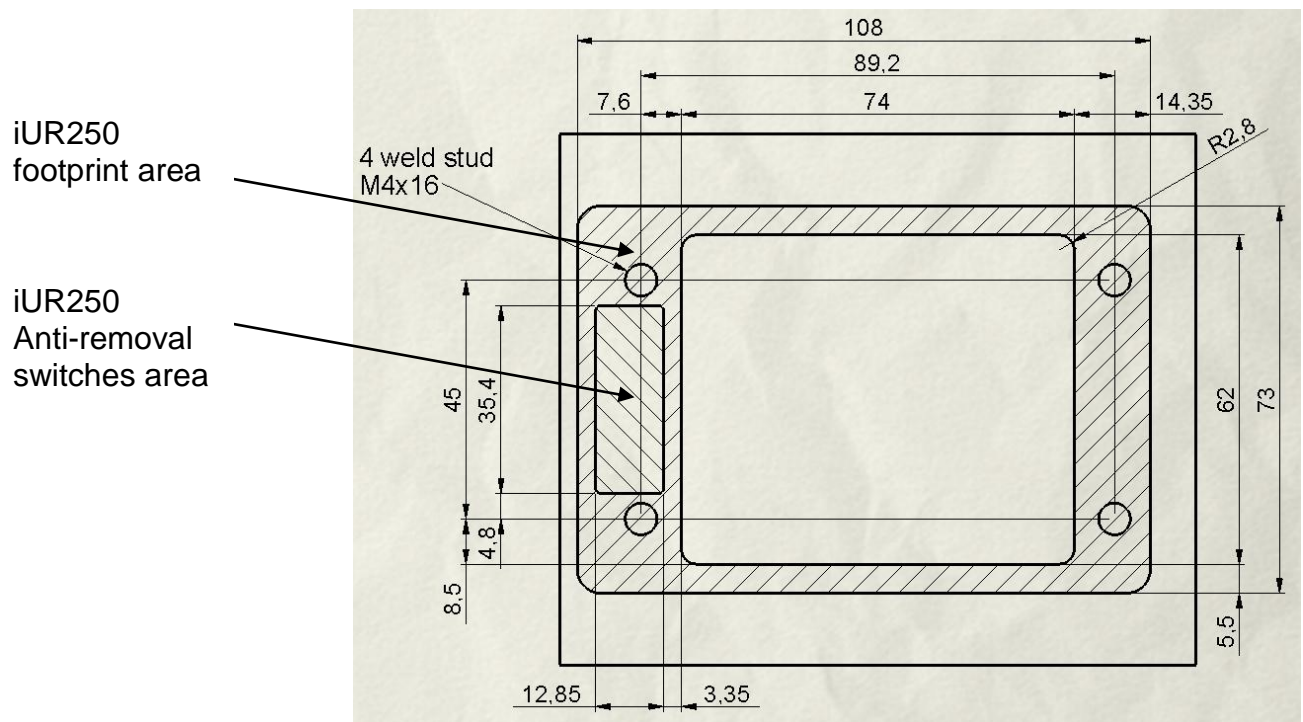
Cut-out drawing for iUR250.
3D design on demand.

6.3 INSTALLING THE READER IUR250

iUR fixing requires M4-M6 hexagonal nuts.
Put the iUR over the studs.
Screw the 4 nuts with a 1.0-1.3 N.m torque.
 It is recommended to use threadlocker fluid to prevent unscrewing with vibrations.
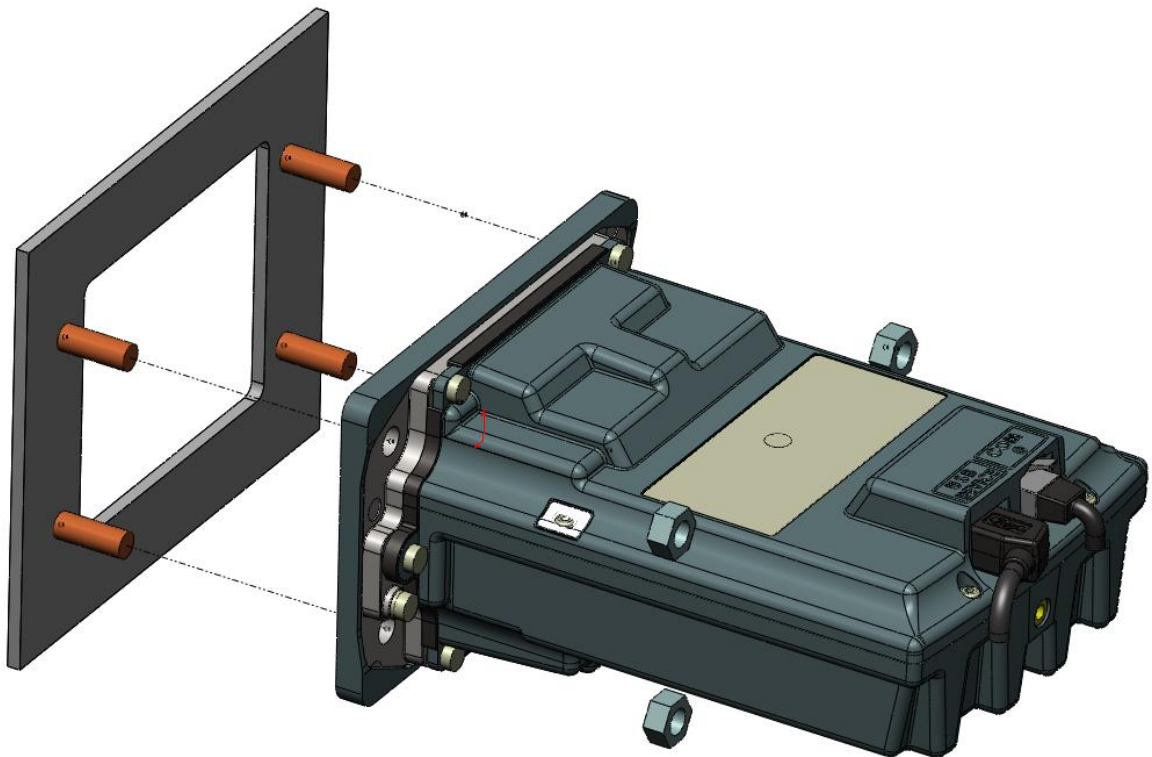
Picture showing the installation of the iUR250

6.4 WATER EVACUATION CONSIDERATION

It is recommended to plug a flexible tube to the water evacuation pipe of the iUR250 to avoid water ingress inside the kiosk. The pipe is provided with the product and has to be sticked to the evacuation hole.
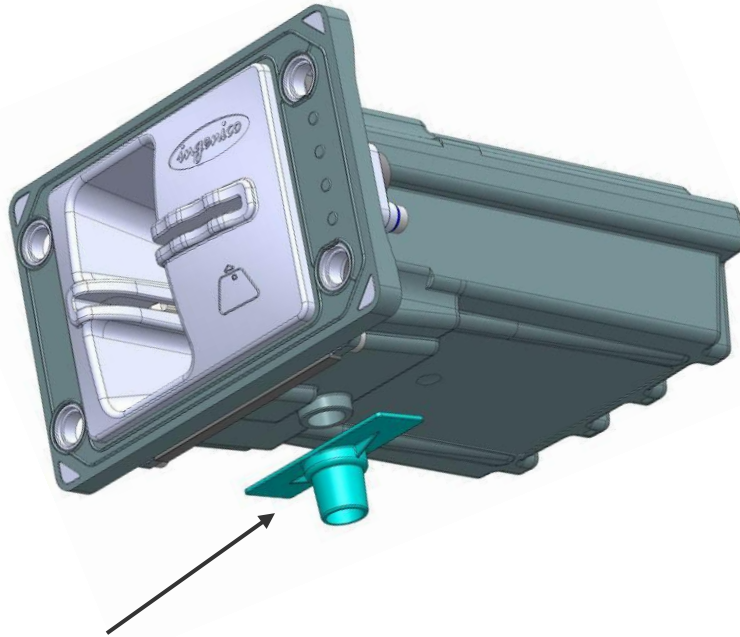
Evacuation pipe

Picture showing evacuation pipe

6.5 CONNECTING THE IUR250 TO THE KIOSK GROUND

The iUR250 should be connected to the ground of kiosk chassis using a copper braid fastened with the provided grounding screw and washer.

Grounding screw
Grounding hole
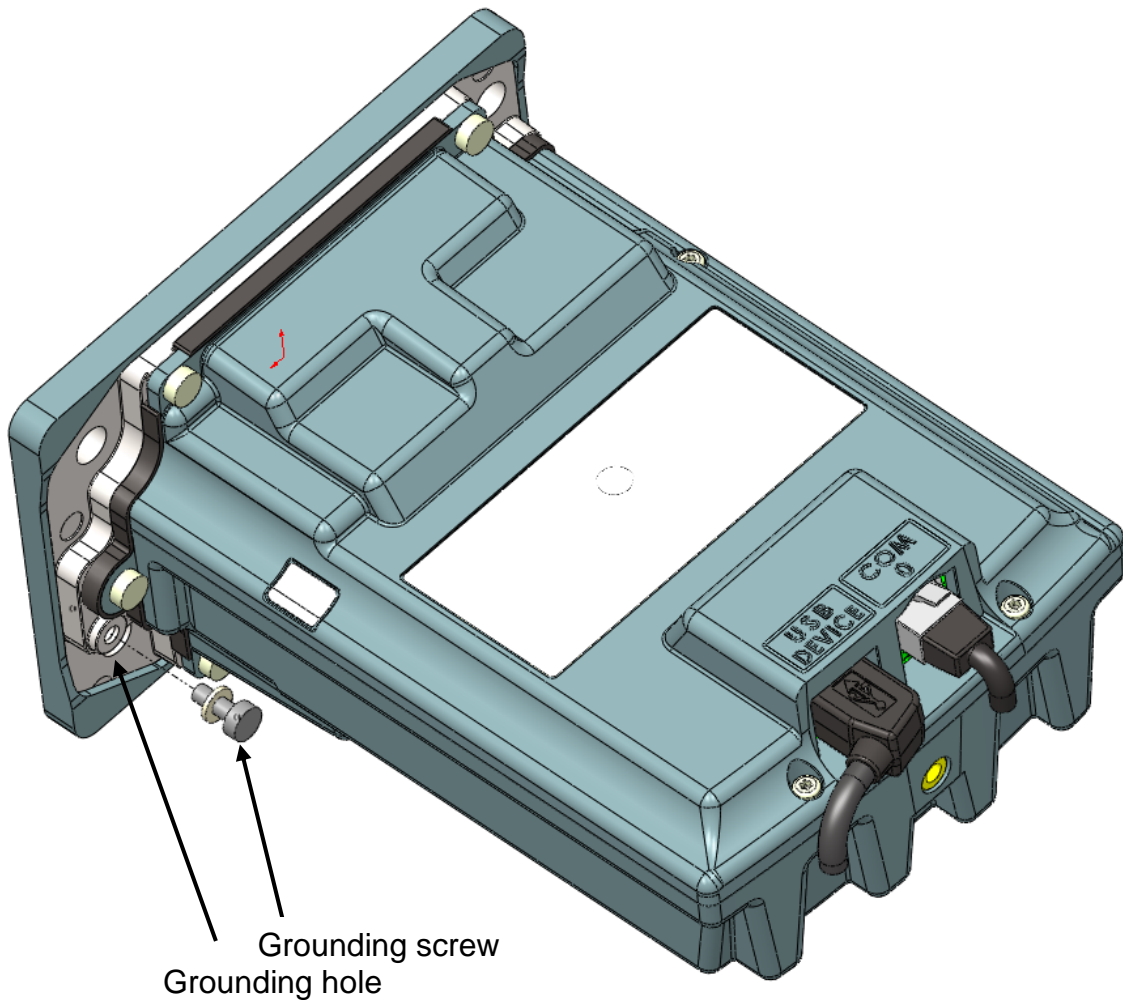
Picture showing the grounding ground hole and screw of the iUR250

# 7 ASSEMBLY PROCEDURE FOR IUP250 PINPAD

7.1 KIOSK MINIMUM VOLUME FOR IUP250

The iUP250 requires minimum volume in the kiosk.
It includes cables and pinshield mounting.
3D design on demand.
The minimum volume is 123mm width x 154 mm height x 52 mm depth
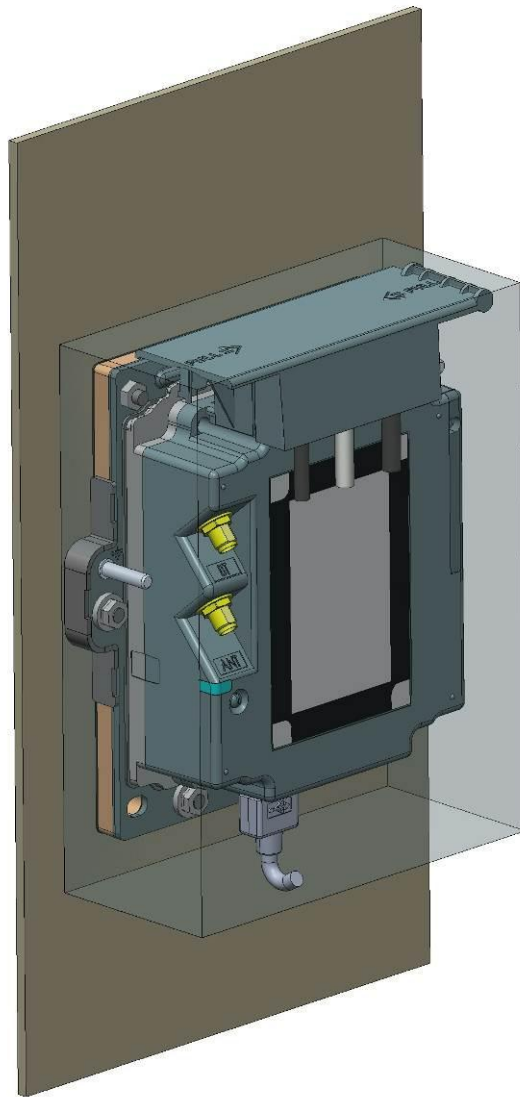
Picture showing the minimum volume for the iUR250

7.2 KIOSK PREPARATION FOR IUP250 NEW INSTALLATION

iUP250 uses EVA mounting standard with additional fixing studs. It requires a cut out in the kiosk to the dimensions detailed in the diagram below (all dimensions are in millimeters).

The drawing below shows the footprint of iUP250 product.

CAUTION:

It is important that the iUP250 footprint surface on the kiosk must be flat and cleared of any holes and burrs.

Special attention is required for anti-removal switches area.

3D step files are also available upon request.

Fixing must be done by 6 M4x16mm welded studs.
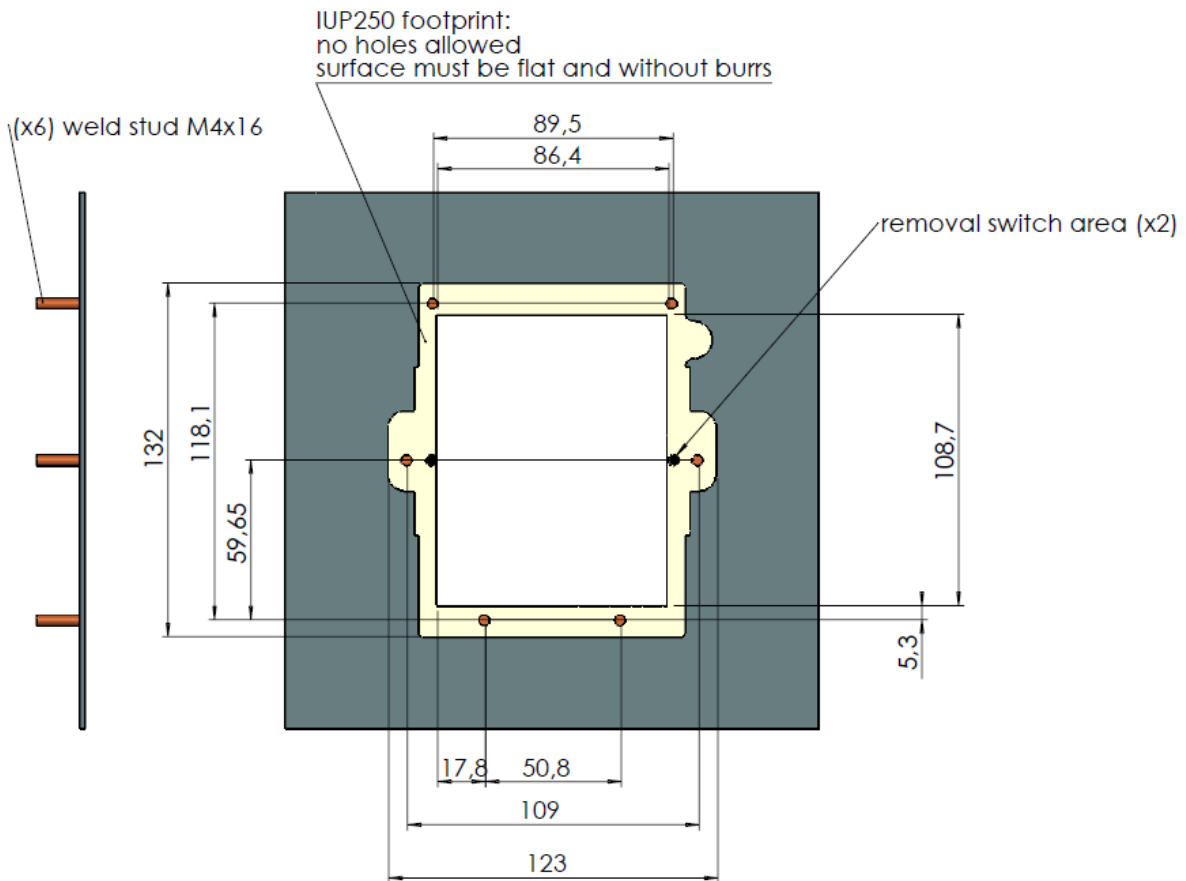
Drawing of the cut-out for the iUP250 3D design on demand.

7.3 INSTALLING THE IUP250 PINPAD IN NEW KIOSK

iUR requires standards hexagonal nuts for integration into a kiosk.

Screw the 6 nuts with a <u>1.0 N.m</u> torque.
 It is recommended to use threadlocker fluid to prevent unscrewing with vibrations.
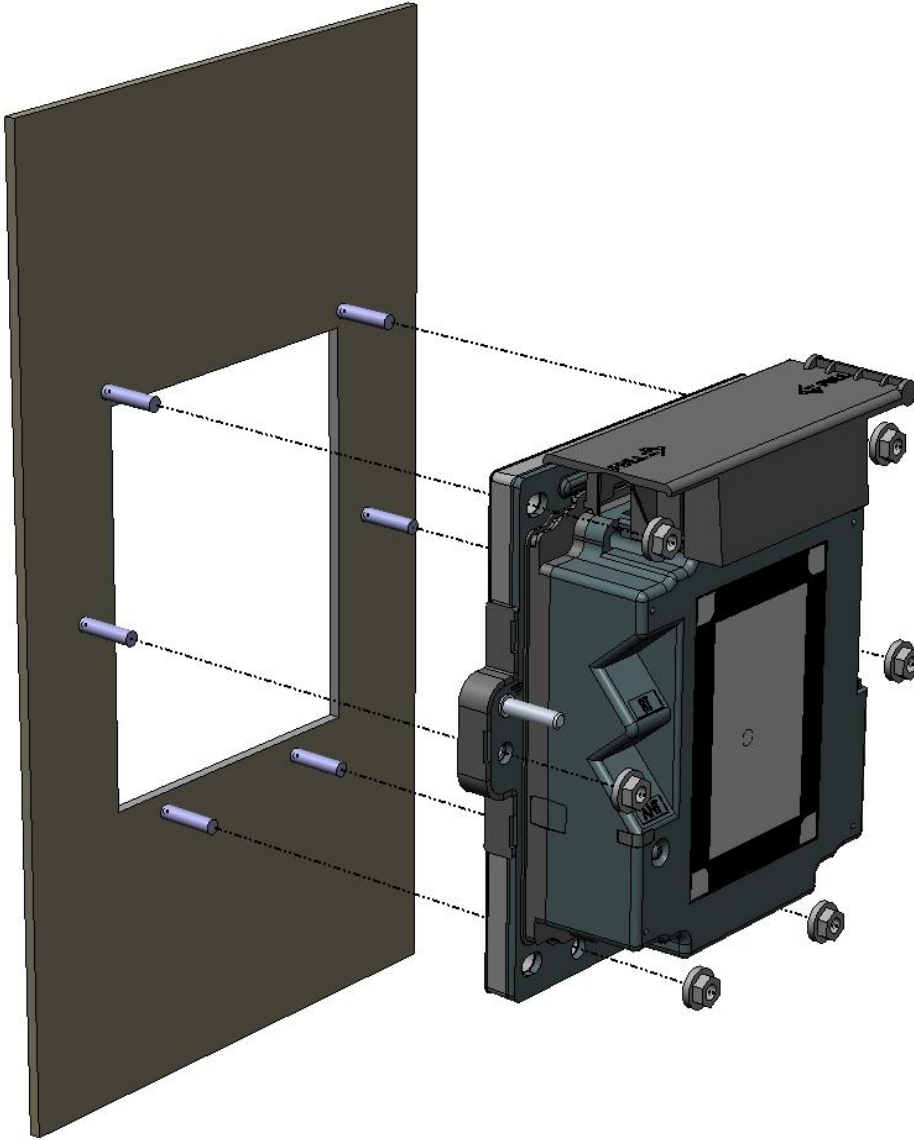
Picture showing a new installation of the iUP250

7.4 KIOSK PREPARATION FOR IUP250 INSTALLATION AS REPLACEMENT OF I9530 PRODUCT

The installation of iUP250 as replacement of i9530 product requires an adapting sheet metal part. This part is not provided by Ingenico.
It is required by security regulation that this part must be permanently mounted on the kiosk (i.e by soldering) and cannot be removed from the kiosk.
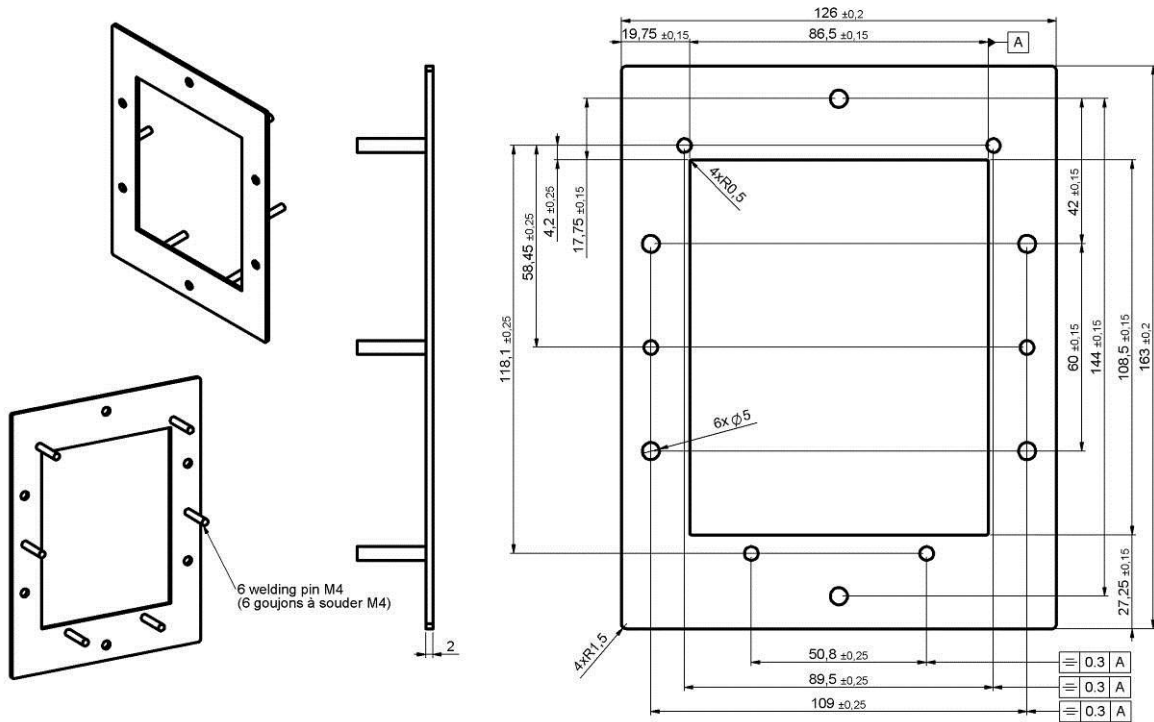
Drawing showing the adapter part of the iUP250 in existing i9530 installation

7.5 INSTALLING THE IUP250 PINPAD AS REPLACEMENT OF I9530

iUP250 can be installed as follow.
Existing studs on the kiosk for i9530 product are used to guide the adapter part.
Adaptator part must be permanently fixed to the kiosk.
We recommend to weld or strongly glued it.

Standard nuts cannot be used on these studs as they will interfere with the iUR250 PINPad and may create a security issue.
Top studs need to be cut to 11 mm to avoid interference with the cable sleeve.
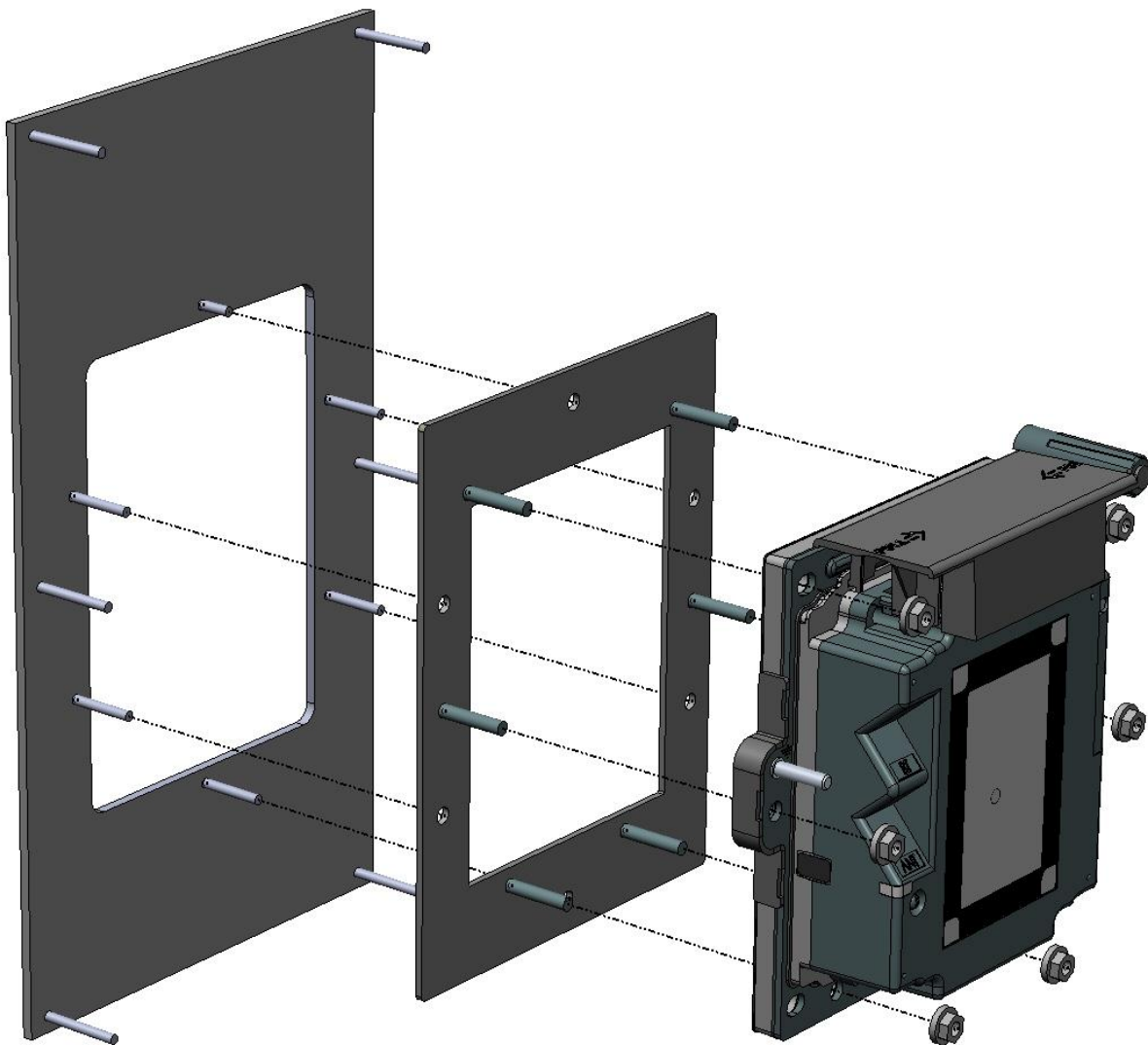
Picture showing the installation of the iUP250 in existing i9530 kiosk

7.6 CONNECTING THE IUP250 TO THE KIOSK GROUND

To insure good connexion of iUP250 to the kiosk ground, it is recommended to install one copper braid connecting the 2 grounding studs and connect this braid to the chassis.
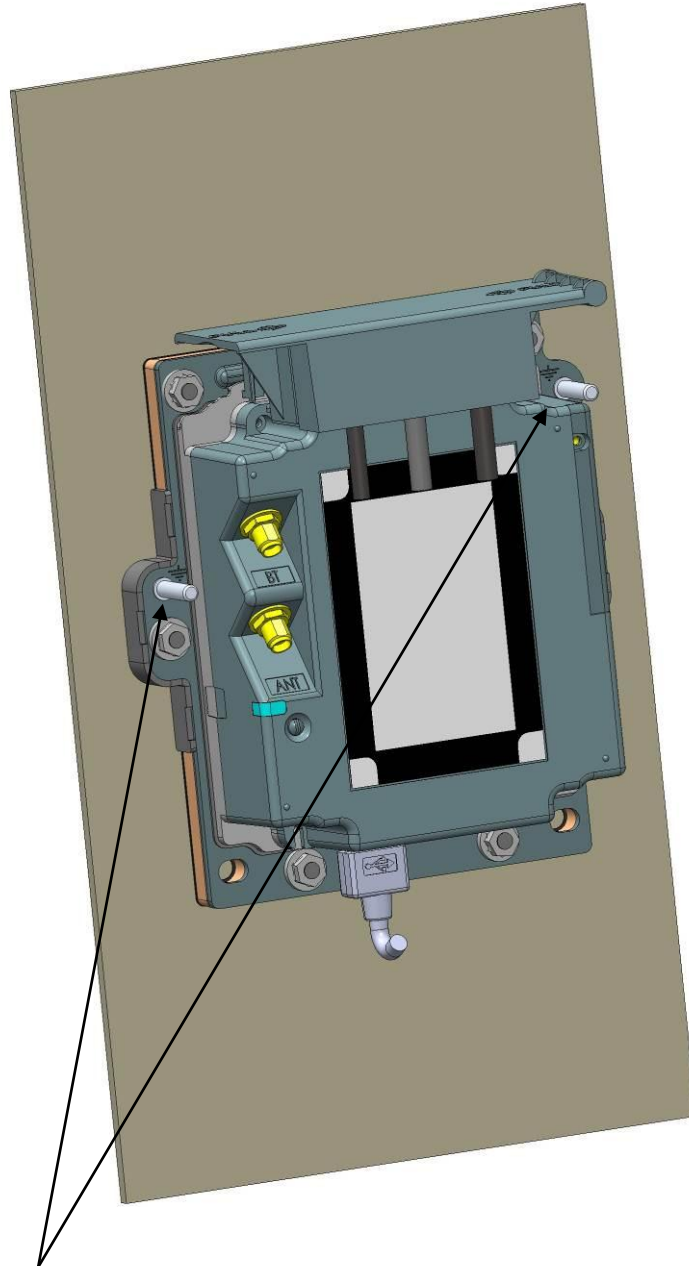
Ground studs to connect copper braid to ground.

Picture showing the grounding of the iUP250

7.7 INSTALLING THE OPTIONAL PINSHIELD

The installation of the standard or light pinshield requires 6 additional holes diameter
5 mm in the kiosk.
A diameter 10 additional hole is required for the Lighting pinshield to pass the cable
through the kiosk.
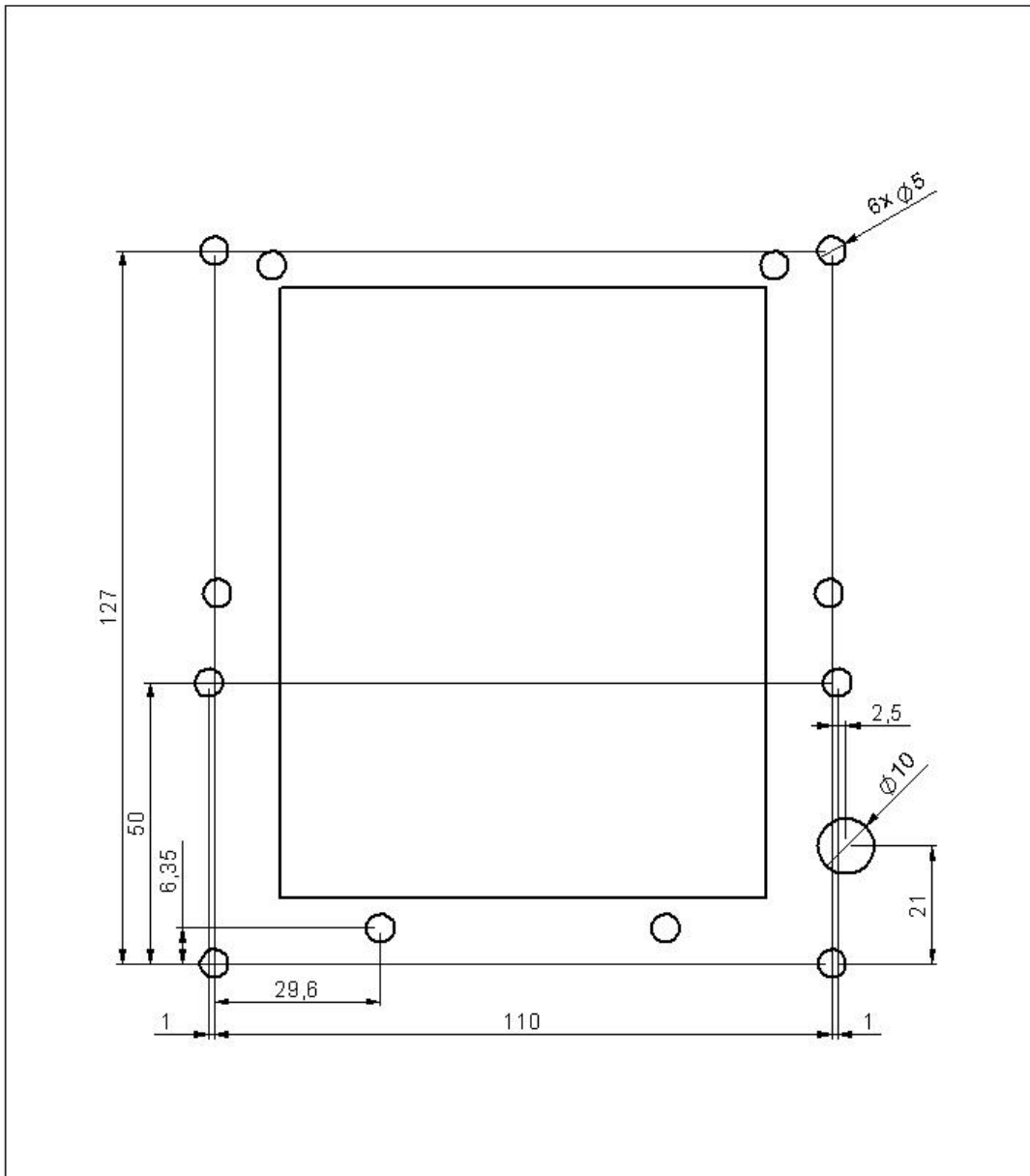
Picture showing the cut-out and holes for the iUP250 pinshield

7.7.1 Installing the standard pinshield

The standard pinshield is mounted on the kiosk using 6 screws M4 x 10.
4 wedges are provided to fill the gap between the keypad and the pinshield according to the kiosk panel thickness. One has to be selected as follow:

Kiosk panel thickness	Wedge to use
2 mm	Wedge thickness 2.5
3 mm	Wedge thickness 3.5
4 mm	Wedge thickness 4.5
5 mm	Wedge thickness 5.5

Wedge
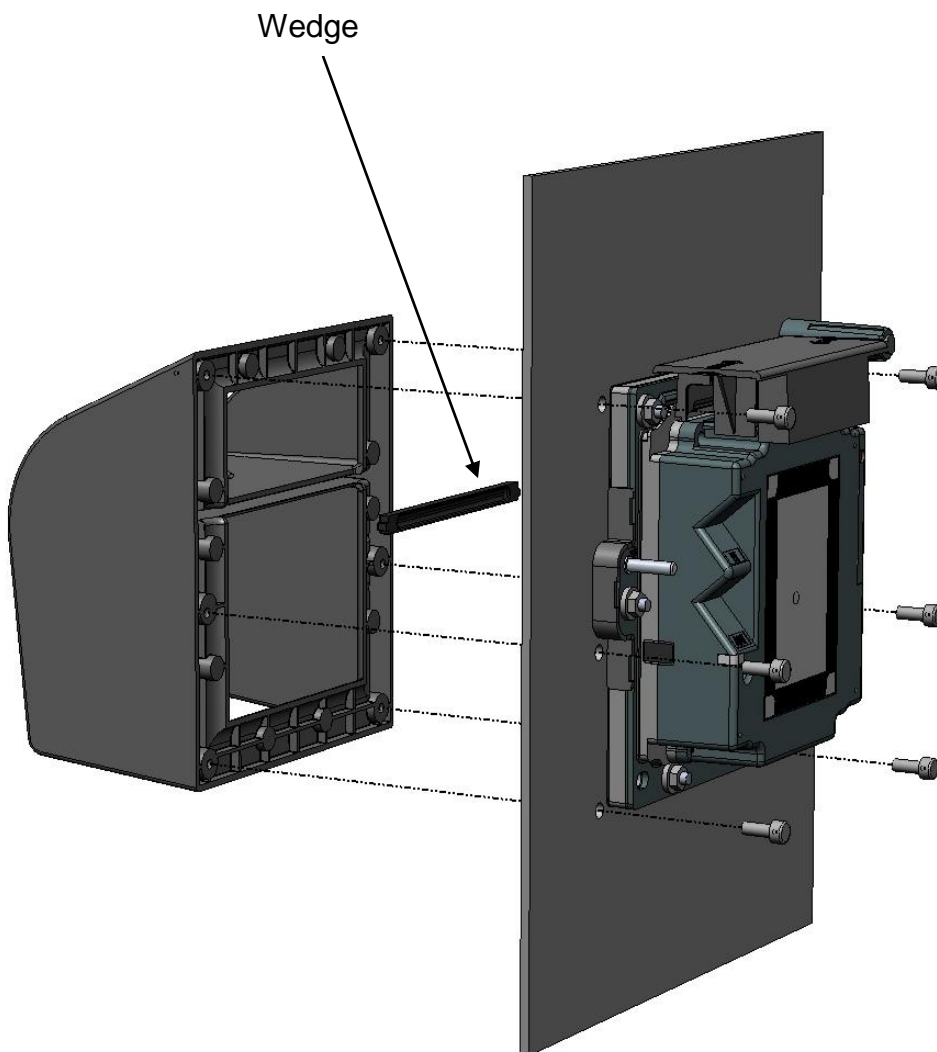
Picture showing installation of the iUP250 standard pinshield.

7.7.2 Installing the Lighting pinshield

The Lighting pinshield will light the keypad thanks to 4 LEDs. It is connected to the iUP250 by a cable plugged on the right side. The pinshield is installed on the kiosk using 6 screws M4 x 10.
4 wedges are provided to fill the gap between the keypad and the pinshield according to the kiosk panel thickness. One has to be selected as follow:

Kiosk panel thickness	Wedge to use
2 mm	Wedge thickness 2.5
3 mm	Wedge thickness 3.5
4 mm	Wedge thickness 4.5
5 mm	Wedge thickness 5.5

Wedge

Light module with cable
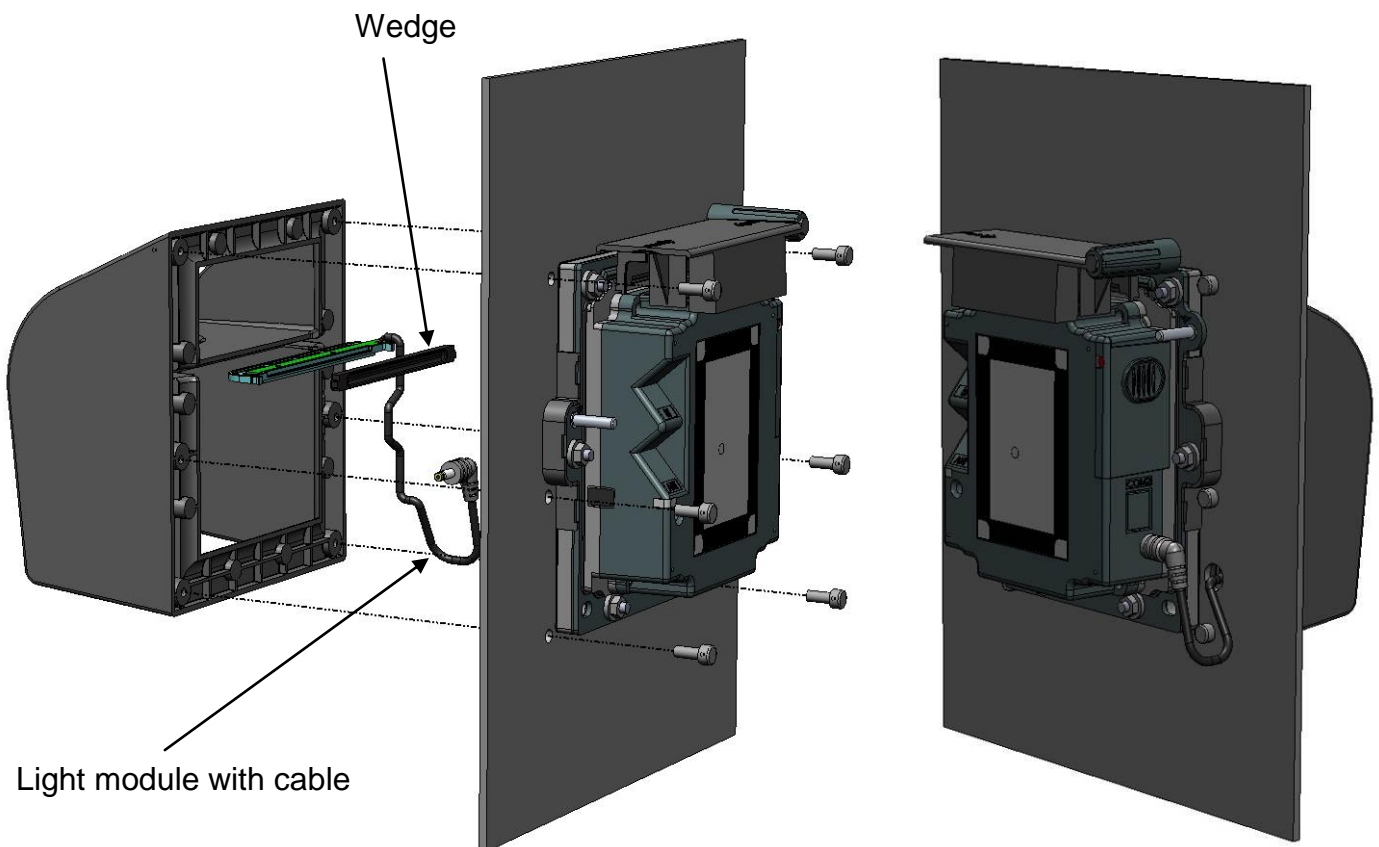
Picture showing installation of the iUP250 lighting pinshield.

8 INFORMATIONS ON IUC150 OR IUC180 CONTACLESS UNATTENDED MODULES

The iUC150 and iUC180 are Contactless solutions for unattended payment applications (indoor and outdoor).
They can be installed and connected to iUP250 and iUR250 products.

See iUC Integration Guide for further information.

8.1.1 Kiosk mechanical requirements

The kiosk panel can be metallic or plastic.
The kiosk panel can be coated with painting but grounding of the IUC must be insured. For the grounding connection both studs must be connected to get the best ESD performance.

The kiosk panel thickness must be between 2 mm and 5 mm.

The iUC150 or iUC180 use EVA (European vending association) mounting standard.

9 MAINTENANCE

9.1 CONFIGURATION

The iUP250 & iUR250 supplied to you has operational configuration loaded.
In factory, softwares are loaded in the iUP250 & iUR250, as well as parameter definition files.

The parameter definition file of the UCMC component is used, in particular, to determine the type of printer used (local/host) and the position of the host (COMx).

To change configuration, you must load a new parameter definition file (supplied by Ingenico).
This operation can be performed using the LLT or a USB key (see § Loading by USB key)

For more information concerning configuration, contact Ingenico Technical Support.

9.2 PRODUCTS COMMISIONNING

Please refer to ICO/ETU/11/1849/YM : Commissioning User's Guide.

To be able to perform the commissioning procedure the anti-removal must be correctly mounted see chapter 6.2 for iUR250 and 7.2 for iUP250.
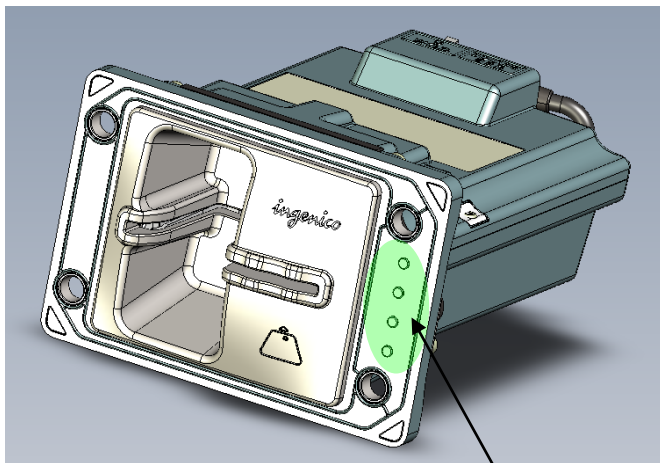
Anti-removal area
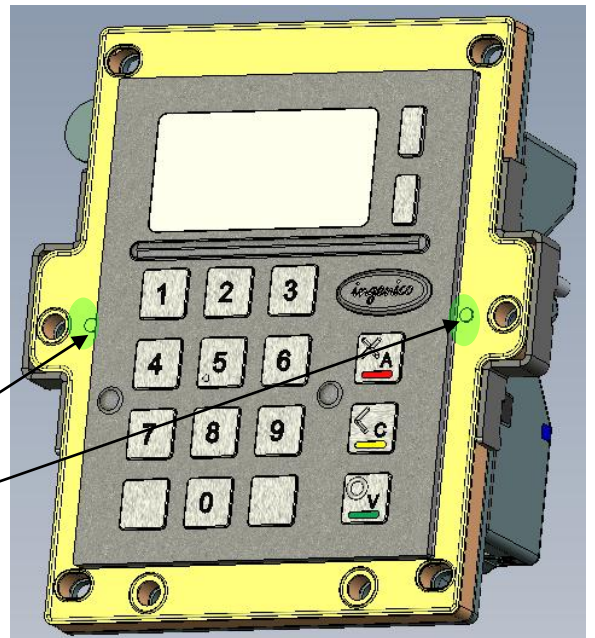
9.3 REACTIVATION

iUR250 can be opened for maintenance (cleaning operation, extraction of jammed object for example).
The reactivation process can be achieved with a tool terminal and two smart cards with pin codes. (For more information, contact commercial department of Ingenico)

On the iUR250 if reactivation process fails, check that the application has been re-charged and re-attempt.

If the red LED is lit, it may be a case of permanent tamper detection. Check in this case that the product is correctly assembled and re-attempt.

If the problem persists, it may be a hardware problem (broken switch...). In this case, a shipment repair is needed.

9.4 OPERATING LIFE

Minimum operating life of 5 years.

- Keyboard
    - 1.000.000 key strokes
    - Keys markings ensure resistance to wear

- Reader
    - 500.000 card insertions

10 CLEANING INSTRUCTIONS

The external front face of the PINPad and iUN reader should be carefully cleaned in a regular basis.

The goal is to keep the display and the keyboard free of dirt and solvents.

First of all, unplug all the wires from the terminal during this operation.

Good rules for proper cleaning of the terminal are:

- Use a soft cloth that is very slightly soaked with soapy water to clean the outside of the terminal.
- Do not clean the electrical connections.
- Do not use in any case, solvents, detergents or abrasive products:
  Those materials might damage the plastic or electrical contacts.
- Avoid also the use of pressurized liquids.
- Avoid exposing the terminal to the direct rays of the sun.
- Do not put anything into the slot of the smart card reader

It is recommended to clean regularly the hybrid reader smart connector with dry cleaning cards.

11 DISASSEMBLING THE PRODUCTS ACCORDING TO WEEE DIRECTIVE

11.1 IUP250 END-OF–LIFE DISASSEMBLY INSTRUCTIONS

This document is intended for treatment and recycling facilities. It provides the basic instructions for the disassembly of Ingenico products to remove components and materials requiring selective treatment, as defined by EU directive 2002/96/EC, Waste Electrical and Electronic Equipment (WEEE).

Ce document est destiné aux installations de traitement et de recyclage. Il fournit les instructions de base pour le démontage de produits Ingenico afin de retirer les composants et matériaux nécessitant un traitement sélectif, tel que défini par la directive européenne 2002/96/CE, sur les Déchets d'Equipements Electriques et Electroniques (DEEE).

1. MODELS AND DESCRIPTIONS
MODÈLES ET DESCRIPTIONS

Products covered by this disassembly instructions.
Produits concernés par ces instructions de démontage.

Product Name *Nom du produit*	Product description *Description du produit*	Product mass (g) *Masse du produit (g)*
IUP250	Unattended payment PINPad	700g

2. COMPONENTS AND MATERIALS REQUIRING SELECTIVE TREATMENT
COMPOSANTS ET MATERIAUX NÉCESSITANT UN TRAITEMENT SÉLECTIF

The following components and materials, if present in the Ingenico product(s), have to be removed and selectively treated.
Les composants et matériaux suivants, si présents dans le(s) produit(s) Ingenico, doivent être retirés et faire l'objet d'un traitement sélectif.

Components and materials *Composants et matériaux*	Quantity included in product(s) *Quantité contenue dans le(s) produit(s)*
Capacitors containing Polychlorinated biphenyls (PCB) *Condensateurs contenant du polychlorobiphényle (PCB)*	0
Components containing Mercury, such as switches or backlighting lamps *Composants contenant du mercure, tels que les interrupteurs ou les lampes à rétroéclairage*	0
Batteries *Piles et accumulateurs*	1
Printed circuit boards greater than 10 cm² *Cartes de circuits imprimés de plus de 10 cm²*	3max (2 + 1)
Toner cartridges *Cartouches de toner*	0
Plastic containing brominated flame retardants *Matières plastiques contenant des retardateurs de flamme bromés*	0
Asbestos waste and components which contain asbestos *Déchets d'amiante et composants contenant de l'amiante*	0
Cathode ray tubes *Tubes cathodiques*	0
Chlorofluorocarbons (CFC), Hydrochlorofluorocarbons (HCFC) or Hydrofluorocarbons (HFC), Hydrocarbons (HC) *Chlorofluorocarbones (CFC), hydrochlorofluorocarbone (HCFC) ou hydrofluorocarbone (HFC), hydrocarbures (HC)*	0

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Gas discharge lamps *Lampes à décharge*	**0**
Liquid crystal displays (LCD) of a surface greater than 100 cm² and all those back-lighted with gas discharge lamps *Écrans à cristaux liquides (LCD) d'une surface supérieure à 100 cm² et tous les écrans rétroéclairés par des lampes à décharge*	**0**
External electric cables *Câbles électriques extérieurs*	**0**
Components containing refractory ceramic fibres *Composants contenant des fibres céramiques réfractaires*	**0**
Components containing radioactive substances *Composants contenant des substances radioactives*	**0**
Electrolyte capacitors measuring greater 2,5 cm in diameter or height *Condensateurs électrolytiques mesurant plus de 2,5 cm de diamètre ou de hauteur*	**0**

3. PRODUCT DISASSEMBLY PROCESS
PROCESSUS DE DEMONTAGE DU PRODUIT

Basic steps to remove components and materials previously identified and requiring selective treatment.

Etapes de base pour retirer les composants et matériaux précédemment identifiés et nécessitant un traitement sélectif.

Step *Etape*	Product disassembly process *Processus de démontage du produit*
1	**Remove the 4 screws on the rear cover** *Oter les 4 vis du capot arrière*
2	**Remove the cover, remove the FPC** *Oter le capot, ôter le FPC.*
3	**Remove the 4 screws on the extension card. Lift the card, disconnect the FPC below. Remove the extension card.** *Oter les 4 vis sur la carte d'extension, Soulever la carte d'extension et déconnecter le FPC dessous. Oter la carte extension.*
4	**Remove the 6 nuts on the plastic spacer . Remove the plastic spacer, the rear metal plate, the plastic PCB holder** *Oter les 6 écrous maintenant l'entretoise plastique. Oter l'entretoise plastique, puis la tôle arrière, puis le support plastique de PCB*
5	**Remove the keypad card.** *Oter la carte clavier*
6	**Remove the battery from the keypad printed circuit board** *Oter la pile rechargeable de la carte clavier.*

11.2IUR250 END-OF–LIFE DISASSEMBLY INSTRUCTIONS

This document is intended for treatment and recycling facilities. It provides the basic instructions for the disassembly of Ingenico products to remove components and materials requiring selective treatment, as defined by EU directive 2002/96/EC, Waste Electrical and Electronic Equipment (WEEE).

Ce document est destiné aux installations de traitement et de recyclage. Il fournit les instructions de base pour le démontage de produits Ingenico afin de retirer les composants et matériaux nécessitant un traitement sélectif, tel que défini par la directive européenne 2002/96/CE, sur les Déchets d'Equipements Electriques et Electroniques (DEEE).

4. MODELS AND DESCRIPTIONS
MODÈLES ET DESCRIPTIONS

Products covered by this disassembly instructions*.*
Produits concernés par ces instructions de démontage.

Product Name *Nom du produit*	Product description *Description du produit*	Product mass (g) *Masse du produit (g)*
IUR250	unattended electronic payment reader	700g

5. COMPONENTS AND MATERIALS REQUIRING SELECTIVE TREATMENT
COMPOSANTS ET MATERIAUX NÉCESSITANT UN TRAITEMENT SÉLECTIF

The following components and materials, if present in the Ingenico product(s), have to be removed and selectively treated.

Les composants et matériaux suivants, si présents dans le(s) produit(s) Ingenico, doivent être retirés et faire l'objet d'un traitement sélectif.

Components and materials *Composants et matériaux*	Quantity included in product(s) *Quantité contenue dans le(s) produit(s)*
Capacitors containing Polychlorinated biphenyls (PCB) *Condensateurs contenant du polychlorobiphényle (PCB)*	0
Components containing Mercury, such as switches or backlighting lamps *Composants contenant du mercure, tels que les interrupteurs ou les lampes à rétroéclairage*	0
Batteries *Piles et accumulateurs*	1
Printed circuit boards greater than 10 cm² *Cartes de circuits imprimés de plus de 10 cm²*	5
Toner cartridges *Cartouches de toner*	0
Plastic containing brominated flame retardants *Matières plastiques contenant des retardateurs de flamme bromés*	0
Asbestos waste and components which contain asbestos *Déchets d'amiante et composants contenant de l'amiante*	0
Cathode ray tubes *Tubes cathodiques*	0
Chlorofluorocarbons (CFC), Hydrochlorofluorocarbons (HCFC) or Hydrofluorocarbons (HFC), Hydrocarbons (HC) *Chlorofluorocarbones (CFC), hydrochlorofluorocarbone (HCFC) ou hydrofluorocarbone (HFC), hydrocarbures (HC)*	0
Gas discharge lamps *Lampes à décharge*	0
Liquid crystal displays (LCD) of a surface greater than 100 cm² and all those back-lighted with gas discharge lamps *Écrans à cristaux liquides (LCD) d'une surface supérieure à 100 cm² et tous les écrans rétro éclairés par des lampes à décharge*	0
External electric cables *Câbles électriques extérieurs*	0

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Components containing refractory ceramic fibres *Composants contenant des fibres céramiques réfractaires*	0
Components containing radioactive substances *Composants contenant des substances radioactives*	0
Electrolyte capacitors measuring greater 2,5 cm in diameter or height *Condensateurs électrolytiques mesurant plus de 2,5 cm de diamètre ou de hauteur*	0

6. PRODUCT DISASSEMBLY PROCESS
PROCESSUS DE DEMONTAGE DU PRODUIT

Basic steps to remove components and materials previously identified and requiring selective treatment.

Etapes de base pour retirer les composants et matériaux précédemment identifiés et nécessitant un traitement sélectif.

Step *Etape*	Product disassembly process *Processus de démontage du produit*
1	**Remove the cover seal and cut the Anti-Removal FPC** *Retirer le joint de la face avant et couper le flex anti-removal*
2	**Remove the 6 bezel screws and 4 upper cover screws** *Retirer les 6 vis de la face avant et les 4 vis du capot supérieur*
3	**Remove castle of card and take off the Front Security FPC** *Retirer l'ensemble château de carte et décoller le Flex Front Bezel*
4	**Unclip, and remove the dome support and the water collector** *Déclipser et retirer le Support dôme et le réceptacle eau*
5	**Remove the battery from the main circuit board** *Retirer la pile du circuit imprimé principal*

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12 STANDARDS

12.1 ELECTRICAL CONSUMPTIONS

- Average consumptions device waiting for host solicitation :

    - iUP250 – PINPad < 100 mA
      Value measured for Power supply 12V at 25°C
    - iUR250 – Reader < 50 mA
      Value measured for Power supply 12V at 25°C

- Indicative consumption device when contact card transaction is performed :

Hypothesis: no radio (GPRS) reader iUR250 only connected to iUP250

    - iUP250 + iUR250 < TBC
      Value measured for Power supply 12V at 25°C

- Maximum average external supply current:

    - iUP250 – PINPad < 2 A
      Value measured for Power supply 12V at 25°C
  iUR250 – Reader < 0,5 A
      Value measured for Power supply 12V at 25°C

- Maximum consumption in stand-by mode (12 VDC input.):

    - iUP250 – PINPad < 400µA
      Value measured for Power supply 12V at 25°C
    - iUR250 – Reader < 50µA
      Value measured for Power supply 12V at 25°C

12.2 TEMPERATURE AND HUMIDITY

- Operating & Storage conditions :
    - Relative humidity: 5% to 85% non-condensing.
    - External temperature range: -20 °C to 65 °C.

12.3 ENVIRONMENTAL SPECIFICATION CONTINUED

- Operating conditions :
    - Front face shock resistance: IK10
    - Vibrations resistance: 5-9Hz, 6.2mm; 9-200Hz, 1g; 200-500 Hz, 1.5g; 10ct/mn, 10 Cycles
    - Bumps resistant: 6ms, 25g, 500 cycles each direction

- Natural events:
    - Water and dust resistant IP65 for iUP250 and IP34 for iUR250

- Degradation iUP250 –iUR250 specification:
    - Vandal resistant.
    - Impact resistant IK10.
    - Certified anti-tamper and attack resistant.

- Drop iUP250 –iUR250 specification:
    - Drop 1m on concrete surface all faces

12.4 EC STANDARD COMPLIANCE MARKING

EC standard compliance marking certifies that the product stipulated below:
iUR250
iUP250
Conforms to the following harmonized standards:
- IEC/EN 60950-1: Electrical safety of data processing equipment including electrical office equipment. Issue dec. 2001
- EN 55022: Data processing equipment – Radiofrequency disturbance characteristics - Limits and measurement methods. EN 55022 2006 + A1 (2007)
- EN 55024: Data processing equipment – Immunity characteristics - Limits and measurement methods. Issue 1998 + A1- 2001 + A2 – 2003

12.5 IC STATEMENTS

This class (B) digital apparatus complies with Canadian ICES-003.
Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication."

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

"This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device."

 Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne
doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This radio transmitter (IC: 2586D-IUP250) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (IC: 2586D-IUP250) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

FCC Statement

FCC standard compliance marking certifies that the product stipulated below:
iUR250
iUP250

- conforms to the following harmonized standards :
    - part 15 subpart B of the FCC rules

This class (B) digital apparatus complies with Canadian ICES-003.

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

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception which can be determined by turning the equipment off and on, the user is encouraged to try to correct interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
This device complies with FCC and IC radiation exposure limits set forth for general population. This device must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

12.6   ENVIRONMENT (WEEE, BATTERIES AND PACKAGING)

This product is labeled in accordance with European Directives 2002/96/EC concerning Waste Electrical and Electronic Equipment (WEEE) and 2006/66/EC concerning Batteries and Accumulators. Those provisions are requiring producers and manufacturers to become liable for take-back, treatment and recycling upon end of life of equipment and batteries.

The associated symbol means that WEEE and waste batteries must not be thrown away but collected separately and recycled.

Ingenico ensures that efficient collection and recycling schemes are set-up for WEEE and batteries according to the local regulation of your country. Please contact your retailers for more detailed information about the compliance solution in place for disposing of your old product and used batteries.

Packaging waste must also be collected separately to assure a proper disposal and recycling.

Please note that proper recycling of the electrical and electronic equipment and waste batteries will ensure safety of human health and environment.

12.7 SECURITY OF YOUR TERMINAL

Upon receipt of your terminal you should check for signs of tampering of the equipment. It is strongly advised that these checks are performed regularly after receipt. You should check, for example: that the keypad is firmly in place; that there is no evidence of unusual wires that have been connected to any ports on your terminal or associated equipment, the chip card reader, or any other part of your terminal. Such checks would provide warning of any unauthorised modifications to your terminal, and other suspicious behaviour of individuals that have access to your terminal. Your terminal detects any "tampered state". In this state the terminal will repeatedly flash the message" Alert Irruption!" and further use of the terminal will not be possible. If you observer the "Alert Irruption!" message, you should contact the terminal helpdesk immediately.

You are strongly advised to ensure that privileged access to your is only granted to staff that have been independently verified as being trustworthy.

NEVER ask the customer to divulge their PIN Code. Customers should be advised to ensure that they are not being overlooked when entering their PIN Code.

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