



beyond  
payment

## Contactless payment iUC150 & iUC180

The scope of this document is to assist third party integrators when dealing with Ingenico UNattended products (iUN) such as iUC150 and iUC180, or others. It offers all information needed for a successful integration of iUC150 and iUC180 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
0.1	26/04/12	First Draft	O.Fabregoule E.Dubois	
2	31/05/2012	First diffusion	A. Soubiranne O.Fabregoule Y. Moreno E.Dubois	

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# 1 GENERAL

## 1.1 DEFINITION OF ACRONYMS

EMC	Electro Magnetic Compatibility
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
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 IUC150 & IUC180 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 modules for contactless reading are:

- iUC150,
- iUC180.

These compact devices are designed to fit everywhere, thanks to an easy installation, respectful of EVA standard.

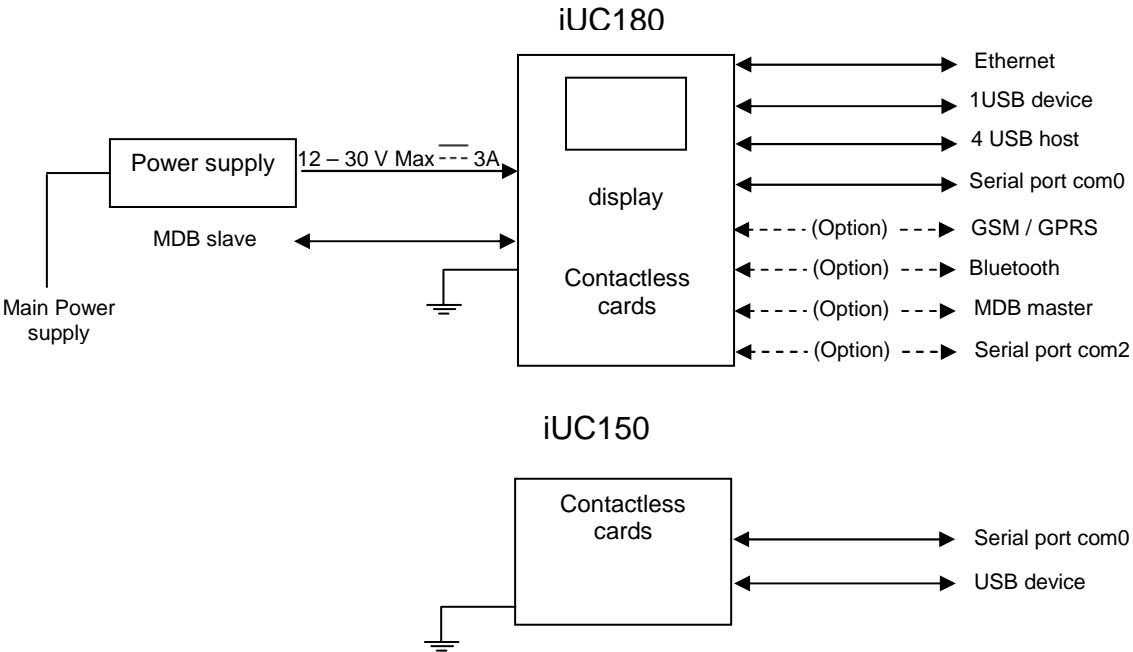
Usage can be indoor or outdoor, resisting to harsh environment.

Remarks:

- For iUC180, 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 iUC180 (through USB, or RS232).
- Ingenico is also offering other iUN modules dedicated to PINPad like iUP250 or Hybrid Card Reader iUR250.
- 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 iUC180 & iUC150 connectivity and communications





## 1.2.2 Services

<b>Training</b>	<ul style="list-style-type: none"><li>- Installation and exploitation</li><li>- Softwares</li><li>- OEMC/M<sup>2</sup>OS development ( days)</li><li>- EMV Level 2 package (2 days)</li><li>- Development workstation SDK</li></ul>
<b>Support</b>	<ul style="list-style-type: none"><li>- Hot-line support</li><li>- Technical assistance</li></ul>
<b>After-Sales Service</b>	<ul style="list-style-type: none"><li>- Fixed cost repair of iUN products</li></ul>
<b>Downloading server centre</b>	<ul style="list-style-type: none"><li>- User licence</li><li>- Installation and commissioning</li><li>- User training</li><li>- Hot-line support</li><li>- Technical assistance</li></ul>
<b>Softwares / Licences</b>	<ul style="list-style-type: none"><li>- User licence for local loading tool, LLT</li><li>- User licence for applications software</li><li>- User licence for M<sup>2</sup>OS</li><li>- Licence for software signature tool, SAT</li><li>- Licence for "EMV Level 2 package "</li><li>- Licence for TCP/IP</li><li>- ...</li></ul>

## 1.3 DESCRIPTION OF MODULES

### 1.3.1 iUC180



Front view

Rear view

### 1.3.1.1 Technical Hardware characteristics

iUC180 technical characteristics:

Mass	680 g
Dimensions	250 x 120 x 64.5 mm (67 with cable protection) (height x width x depth)

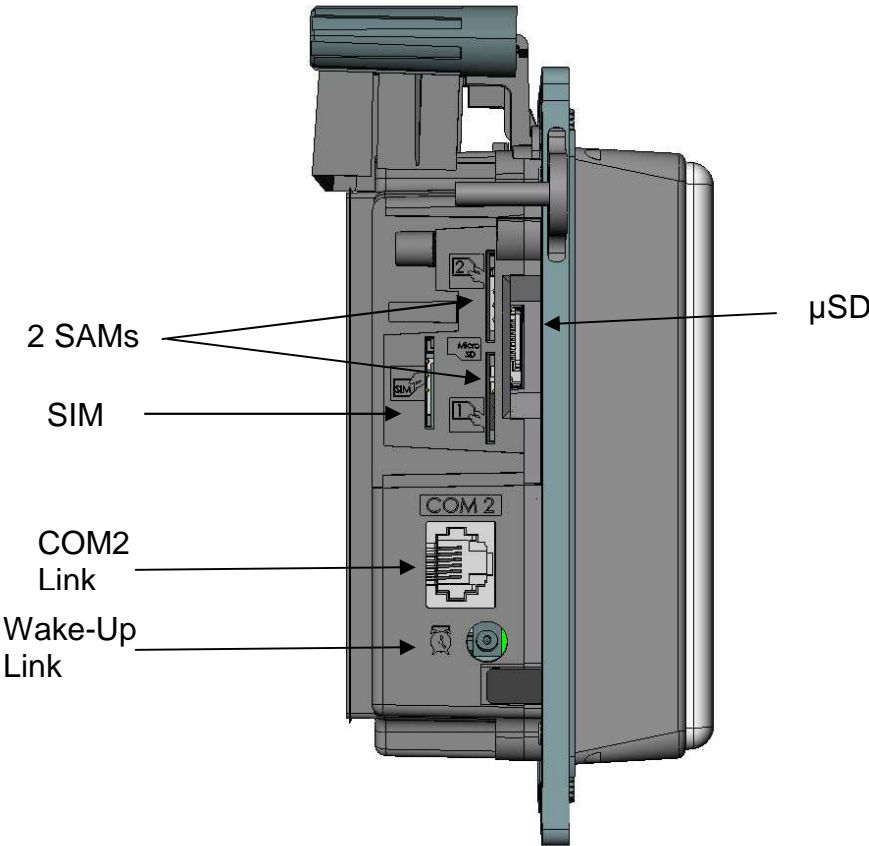
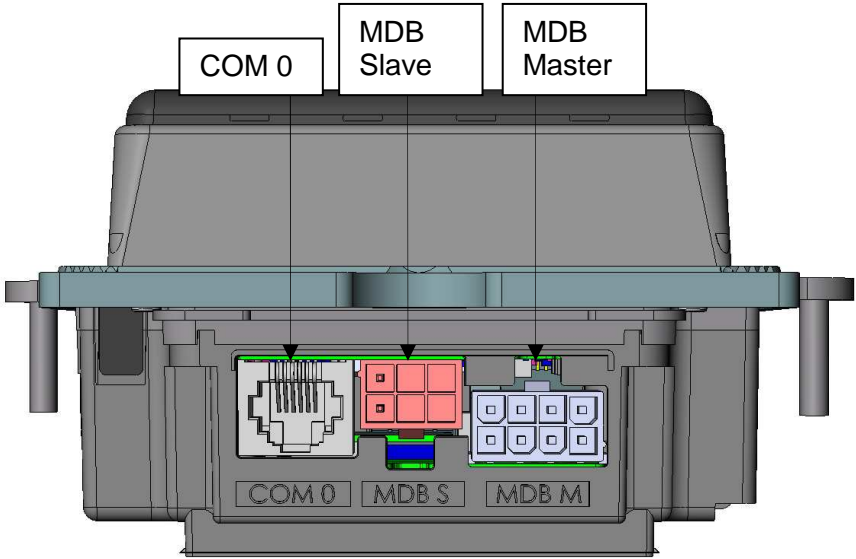
#### Operating conditions

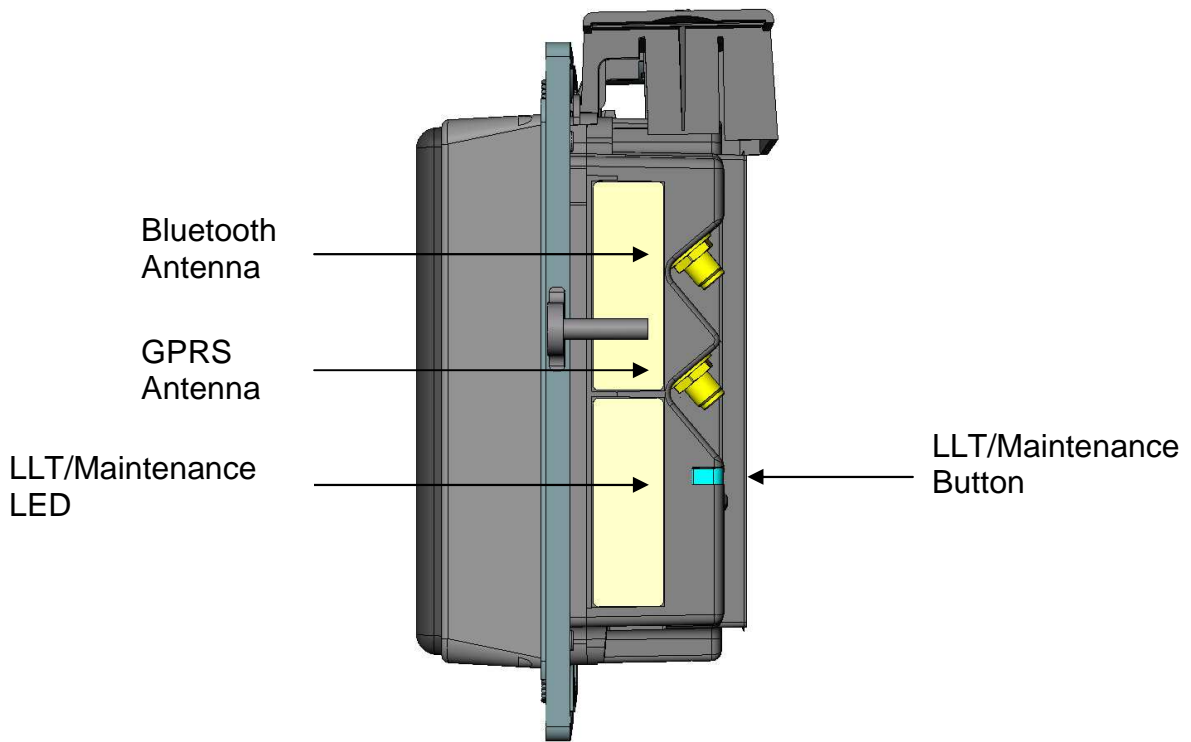
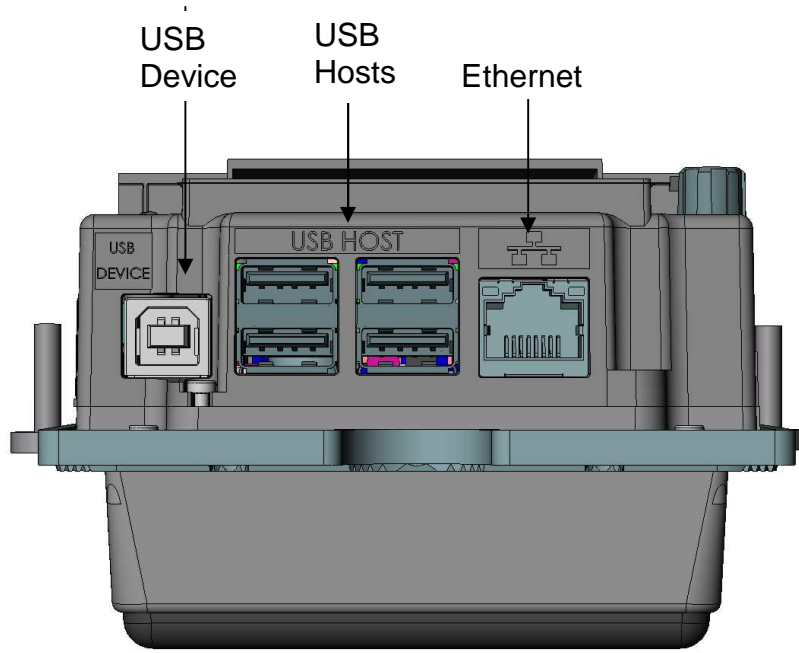
Functional temperature*	-20°C, +65°C
Max relative humidity	85% at 55°C, non-condensing
Maximum backward leaning	No constraints
Power Supply	12 – 30 V Max $\overline{\text{---}}$ 3A
Platform	Telium2
Memory	16 Mb SDRAM and 128 Mb Flash
Functionality	Contactless cards reading 128 x 64 graphic display RGB Backlight Buzzer RGB LED internal status indicator 1 Maintenance Button $\mu$ SD 2 SAMs 1 SIM (optional) 1 Jack for wake-up 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)

#### Storage conditions

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

1.3.1.2 iUC180 output connectors description





1.3.1.2.1 Ethernet

The iUC180 contactless Reader 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 IUC180 contactless reader unit can be connected by type B USB.

### 1.3.1.2.3 USB host

The iUC180 contactless reader 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

iUC180 is designed to save power thanks to a “stand-by mode”.

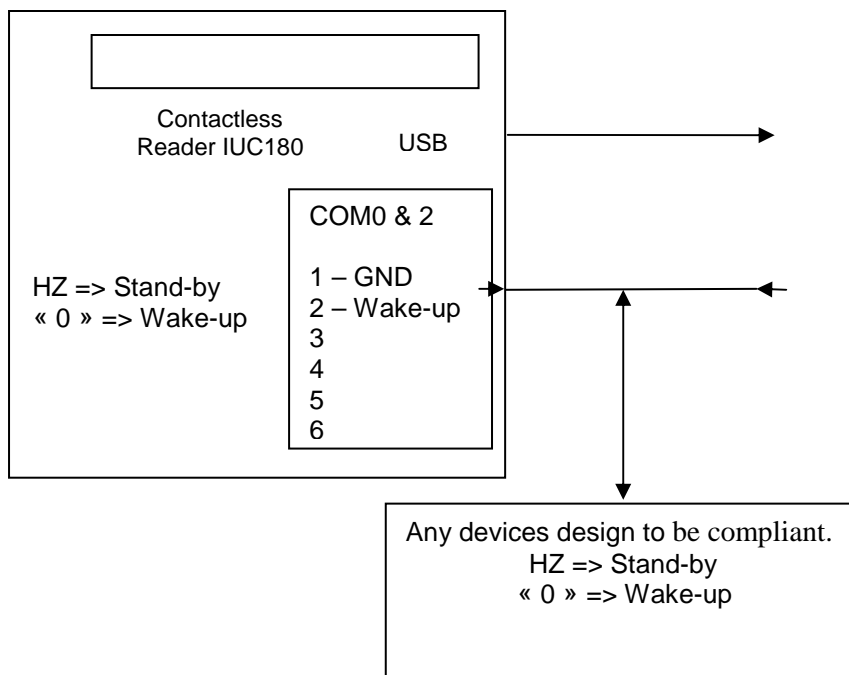
If the stand-by mode is used, use Wake-up mechanism:

- with button connected on jack (optional)
- with Pin 2 of COM0 link & COM2 link
- by pressing the green key on the maintenance keyboard.

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.

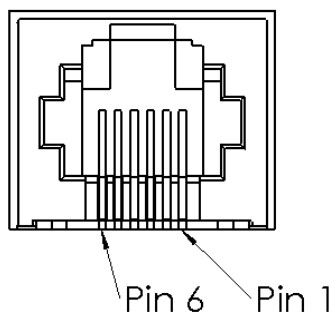
It could be driven by iUP250, iUR250 or any devices designed to be compliant (Host device...).



### 1.3.1.2.5 COM0 link

The iUC180 contactless reader unit can be connected to serial port COM0.  
The connector type is RJ11.

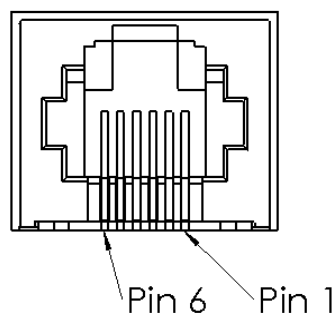
Pin N°	Function
1	GND
2	Wake-up
3	RXD
4	TXD
5	CTS
6	RTS



### 1.3.1.2.6 COM2 link (optional)

The iUC180 contactless reader 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

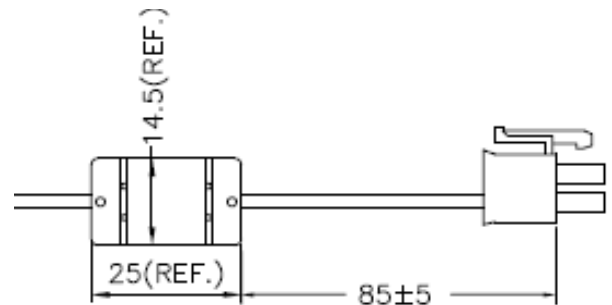
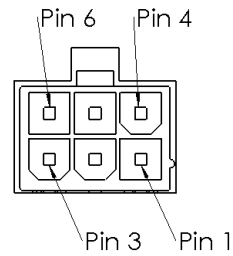


### 1.3.1.2.7 MDB Slave

iUC180 contactless reader unit can be connected by MDB slave. The connector type is MDB 6 pins (Mini – Fit series 87827 (MOLEX)).

iUC180 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.

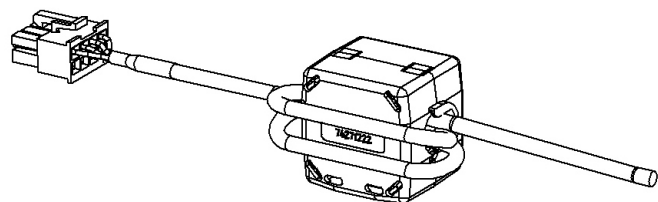
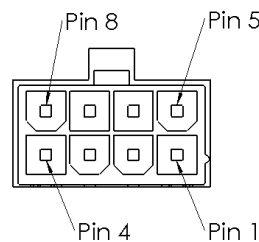
### 1.3.1.2.8 MDB master (optional)

The iUC180 contactless reader unit can be connected by MDB master if option available. The connector type is MDB master 8 pins (Mini – Fit series 87827 (MOLEX)).

iUC180 does not support EXE power supply.

A Würth ferrite 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

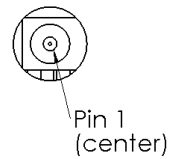




### 1.3.1.2.9 Wake-Up Jack

This connector is used for Wake-up mechanism.

Pin N°	Function	
1	GND	
2	HZ	Stand-by authorized
	"0"	Wake-up / Stand-by unauthorized



The specific jack and cable is a spare part, contact commercial service to purchase it.

### 1.3.1.2.10 Bluetooth (optional)

When the iUC180 contactless reader 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

### 1.3.1.2.11 GPRS (optional)

When the contactless reader 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.

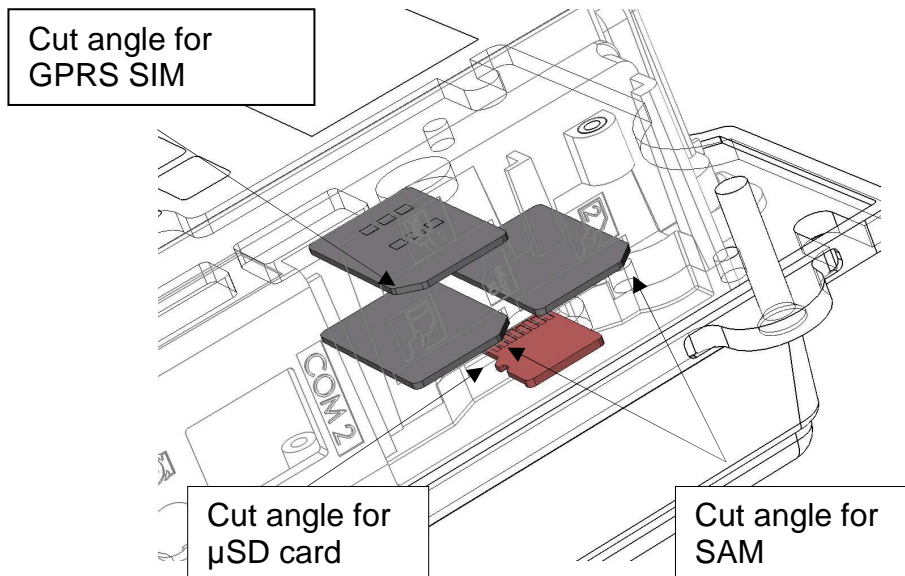
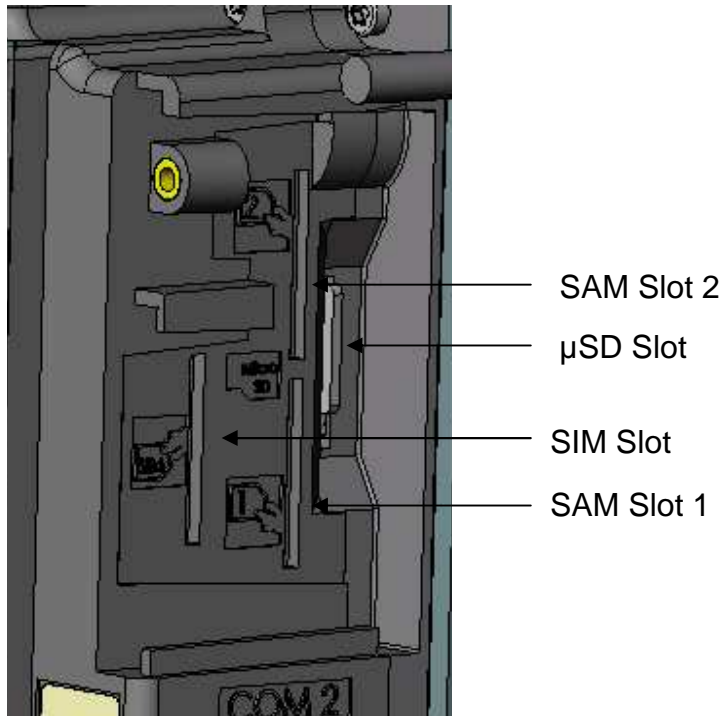
Ingenico recommended antennas:

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 & $\mu$ SD Installation

1. Disconnect the iUC180 contactless reader 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  $\mu$ SD card in  $\mu$ SD slot
5. Insert SIM card in SIM slot.
6. Slide the SAM door and screw.





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.

#### 1.3.1.4 Buzzer

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

#### 1.3.1.5 RGB backlight

The iUC180 has a RGB backlight controlled by applications.

### 1.3.1.6 Contactless LEDs & Contactless Logo

The iUC180 contains 4 green LEDs dedicated to Contactless application, and one blue backlighted Contactless logo.



Contactless LEDs are visible from the top



### 1.3.1.7 Maintenance Button and LED

The iUC180 contactless reader has a maintenance button at 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.

### 1.3.1.8 Keypad



#### Remarks:

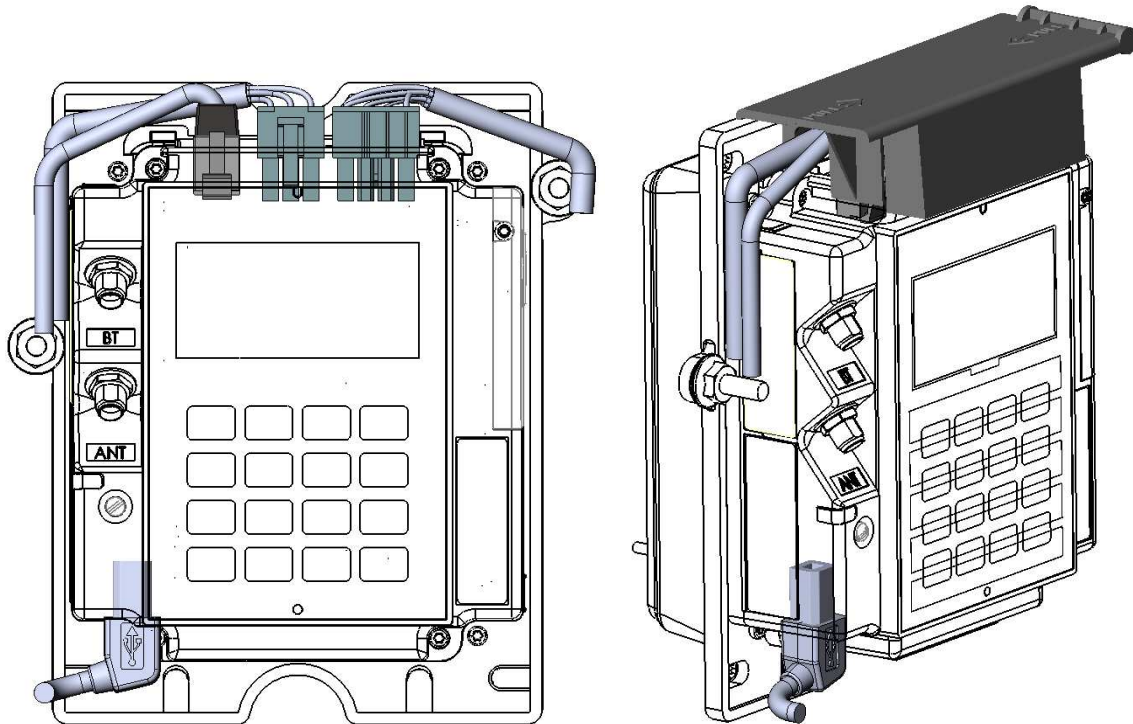
The rear display and the keyboard can only be used in maintenance mode.  
“\*” and “.” are used for Up and Down.

### 1.3.1.9 Cable Protection

A cable sealing sleeve is provided with iUC180 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.

Proposed position for cables:



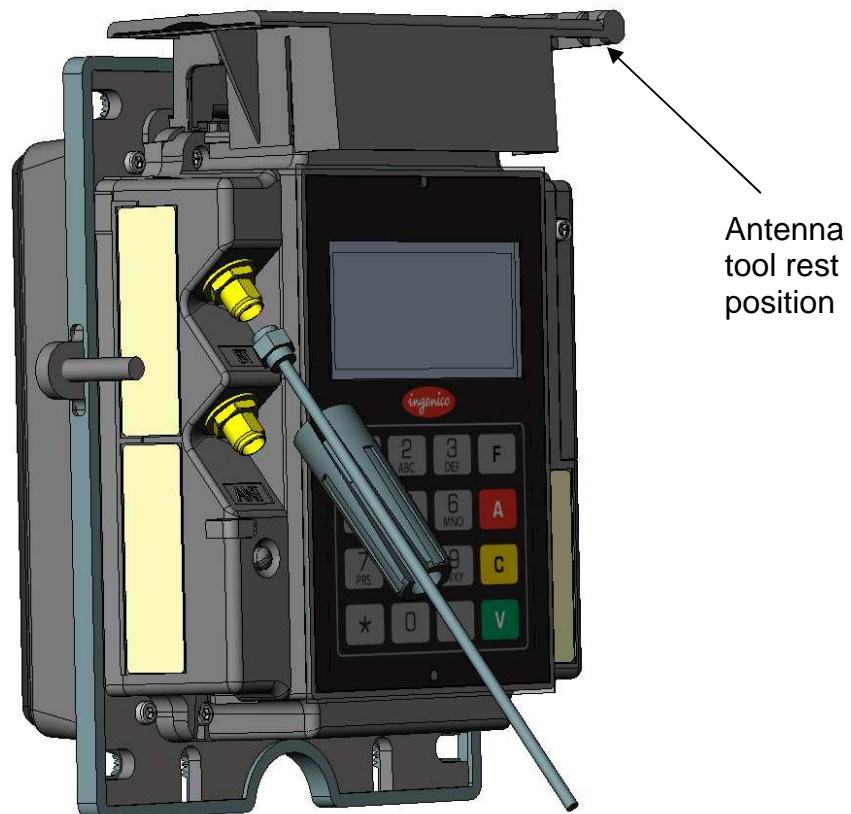


### 1.3.1.10 Antenna Installation

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.

The antenna tool has a rest position on the cable sealing sleeve.



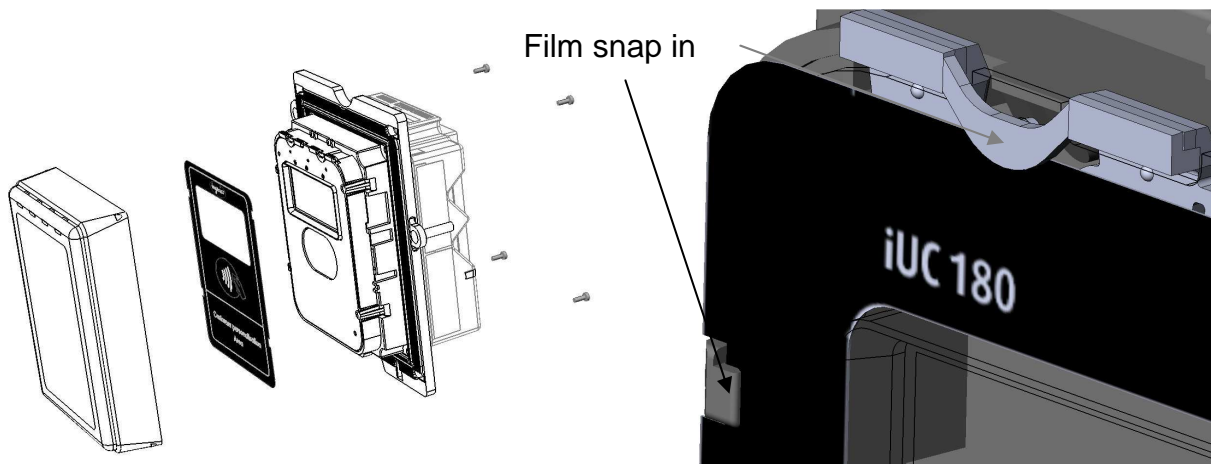
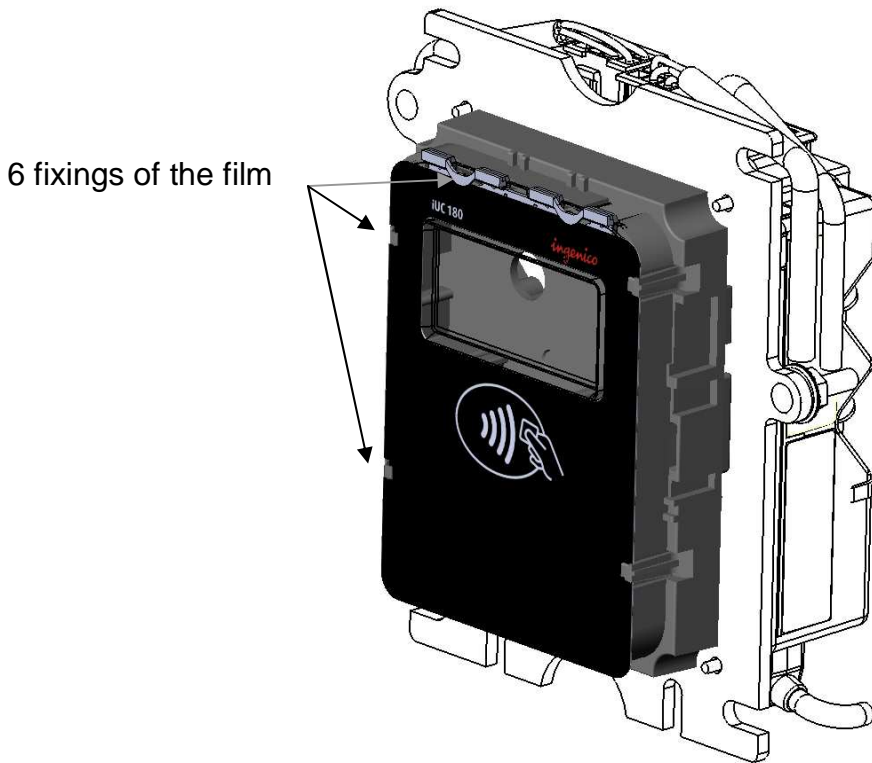
### 1.3.1.11 Grounding connections

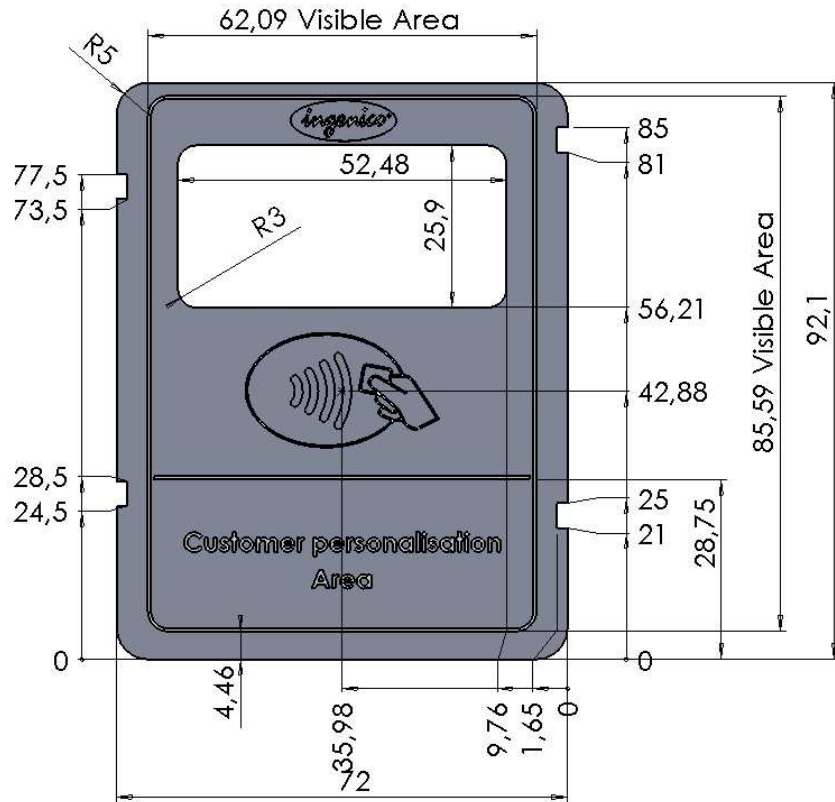
The grounding connections must respect the following scheme.



### 1.3.1.12 Appearance personalisation

- 1 Remove the 4 CHC M4 X 10 screws.
- 2 Dismount the front cover
- 3 Put the film as shown in the pictures.
- 4 Screw the front cover with 1mN torque.



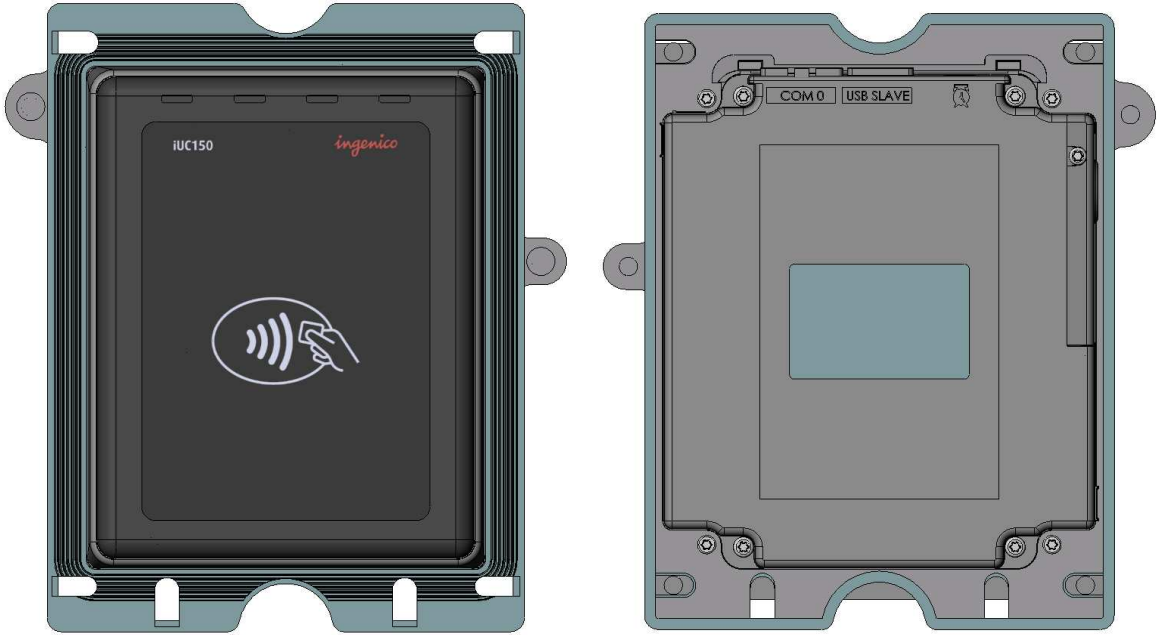


Film Dimensions for iUC180 (2D drawing at your disposal for serigraphic process)

Warning:

The film must not use **metal or conductive** ink.

### 1.3.2 iUC150



Front view

Rear view

#### 1.3.2.1 Technical Hardware characteristics

iUC150 technical characteristics:

Mass	550 g
Dimensions	250 x 120 x 53 mm (67 with cable protection) (height x width x depth)

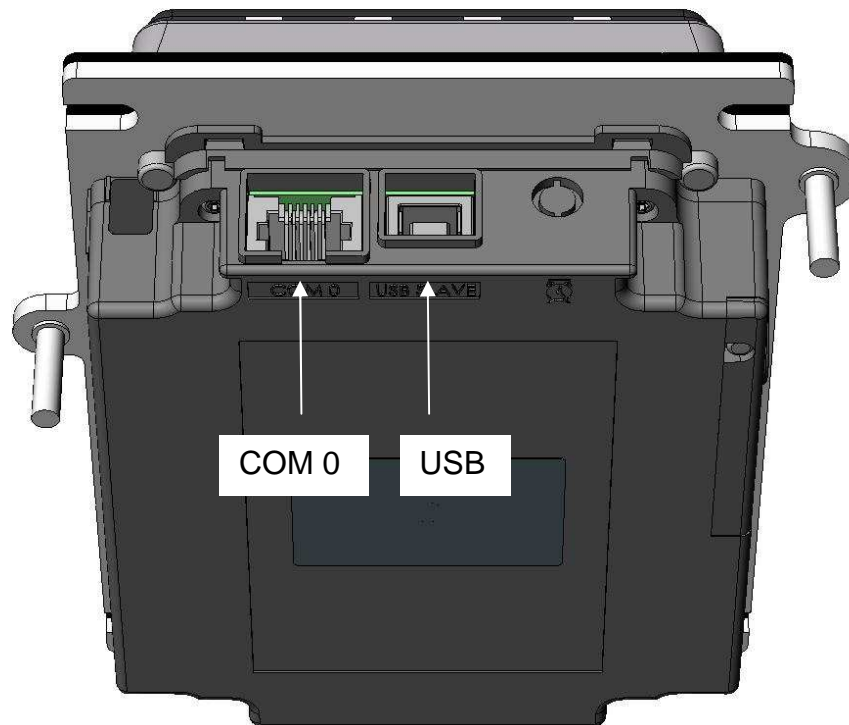
## Operating conditions

Functional temperature	-20°C,+65°C
Max relative humidity	85% at 55°C, non-condensing
Fixing Tilt	No constraints
Power Supply	USB 5V $\overline{\text{---}}$ 500 mA
Platform	Telium2
Functionality	Buzzer
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 iUC150 output connectors description



#### 1.3.2.2.1 USB device

The iUC150 contactless reader unit can be connected by type B USB.

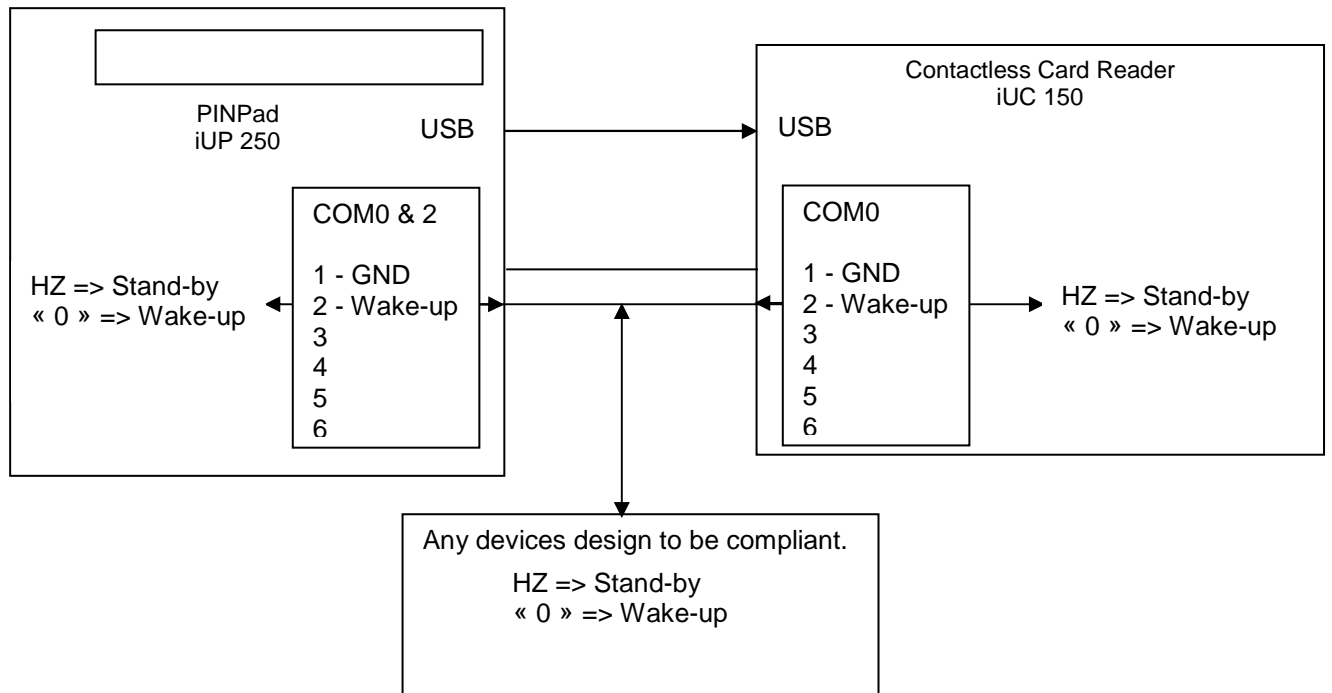
#### 1.3.2.2.2 Wake-up mechanism

iUC150 is design to save power thanks to a “stand-by mode”.

To wake-up iUC150 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

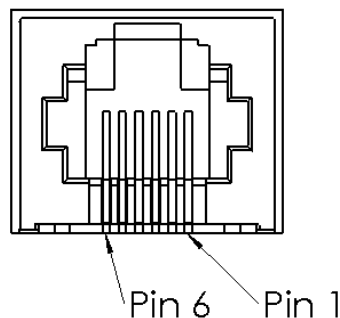
The Wake-up pin is drive to “0” by the one asking the wake-up.  
It could be driven by iUC180 or iUC150 or any devices designed to be compliant (Host device...).



### 1.3.2.2.3 COM0 link

The iUC150 contactless reader 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

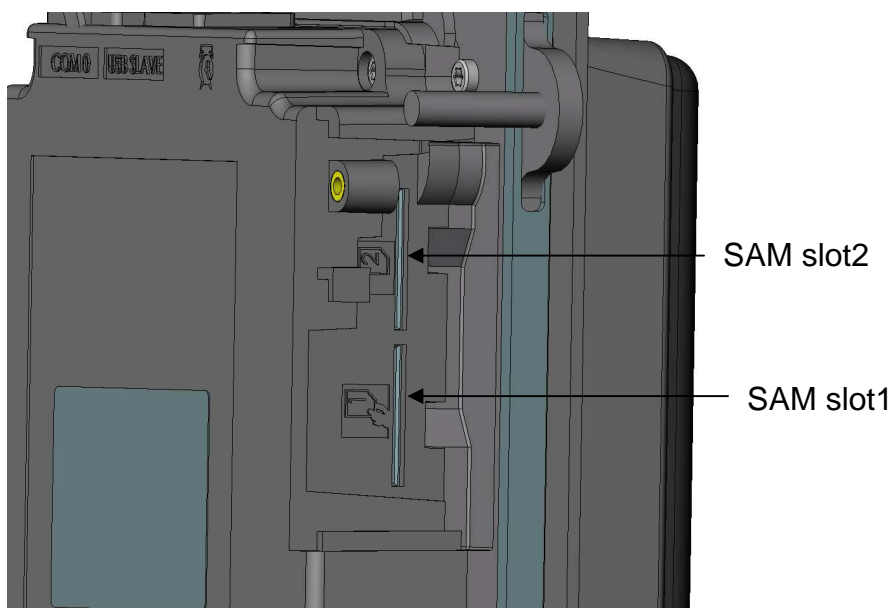
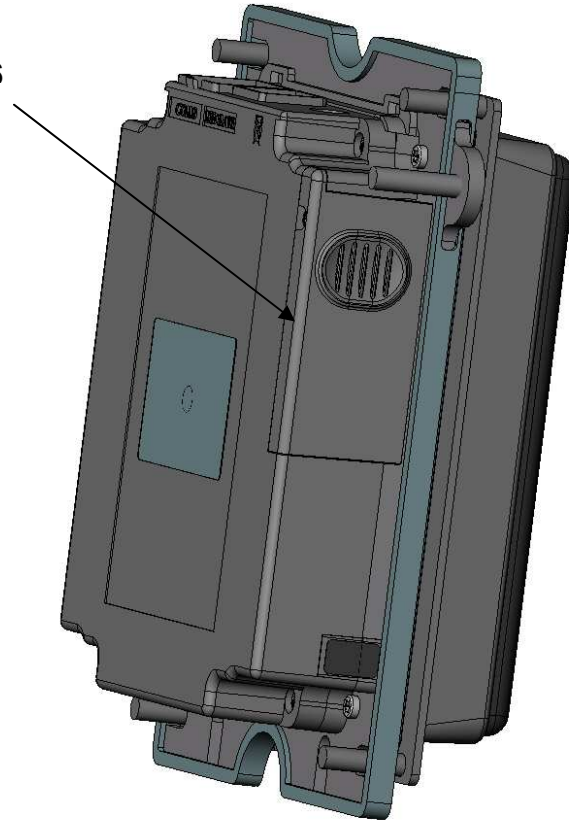


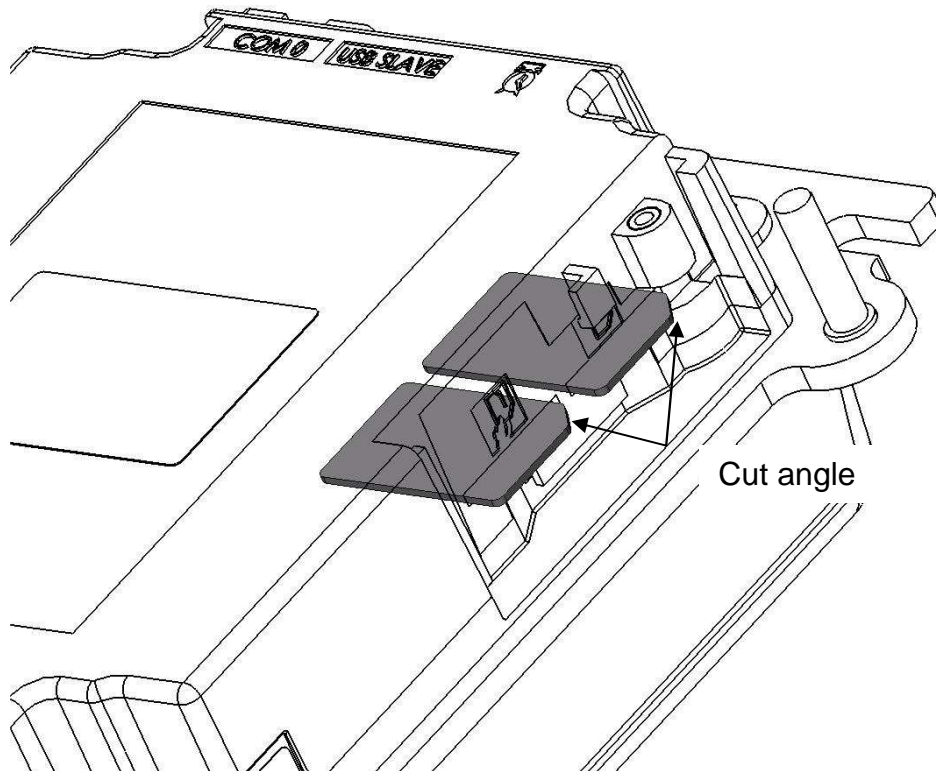


### 1.3.2.3 SAM Installation

- 1 Disconnect the iUC150 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 Slide the SAM door and screw.

SAM door  
Screwed with M2X6





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.

#### 1.3.2.4 Buzzer

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

### 1.3.2.5 Contactless LEDs & Contactless Logo

The iUC150 contains 4 green LEDs dedicated to Contactless application, and one blue backlighted Contactless logo.



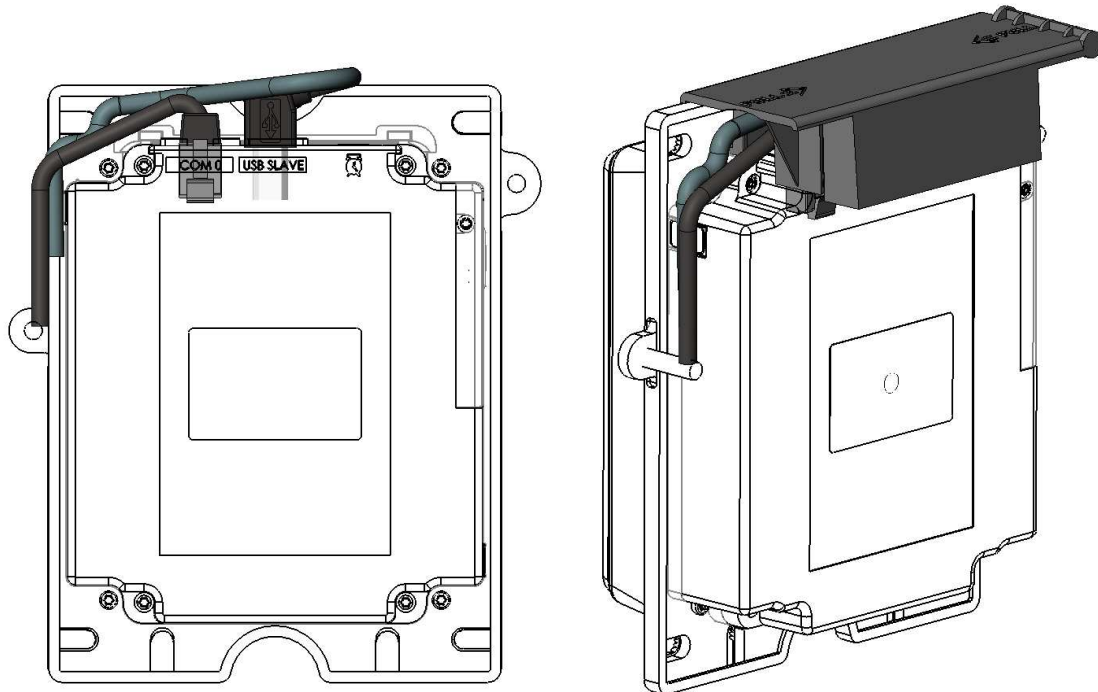
Contactless LEDs are visible from the top



### 1.3.2.6 Cable Protection

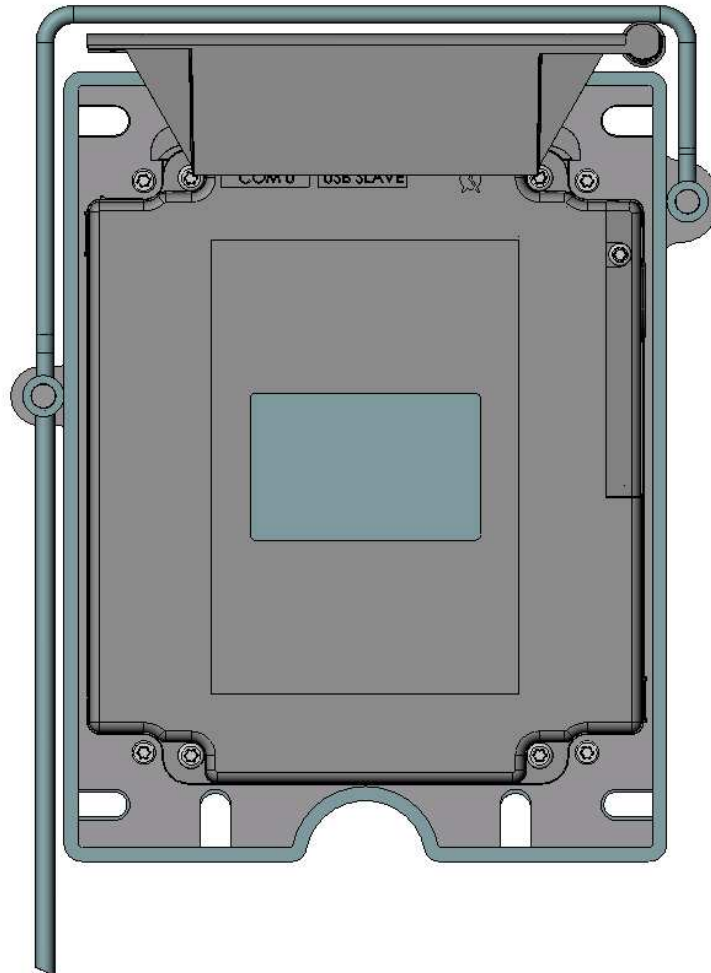
A cable sealing sleeve is provided with iUC180 to protect the top of product against water runoff.

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.



### 1.3.2.7 Grounding connections

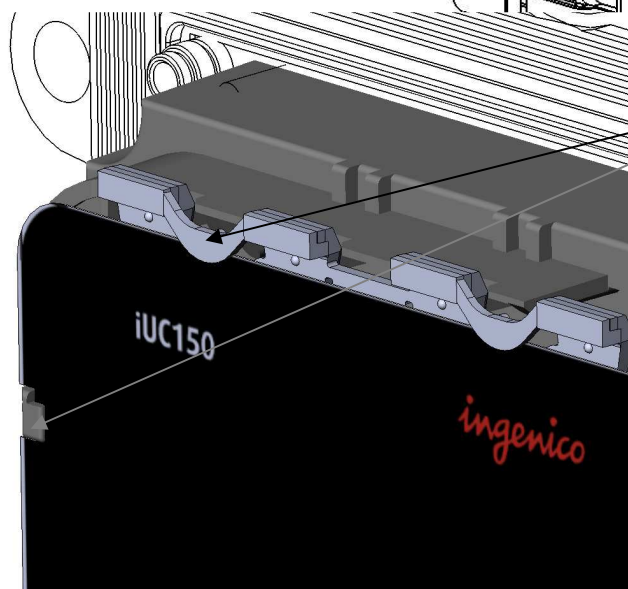
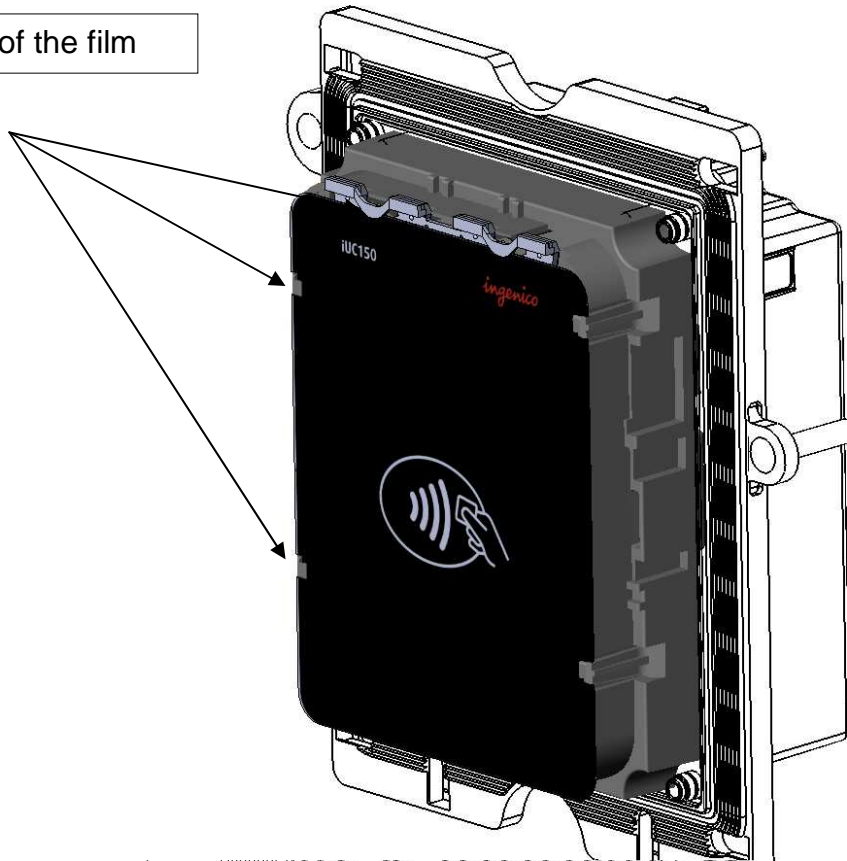
The grounding connections must respect the following scheme.



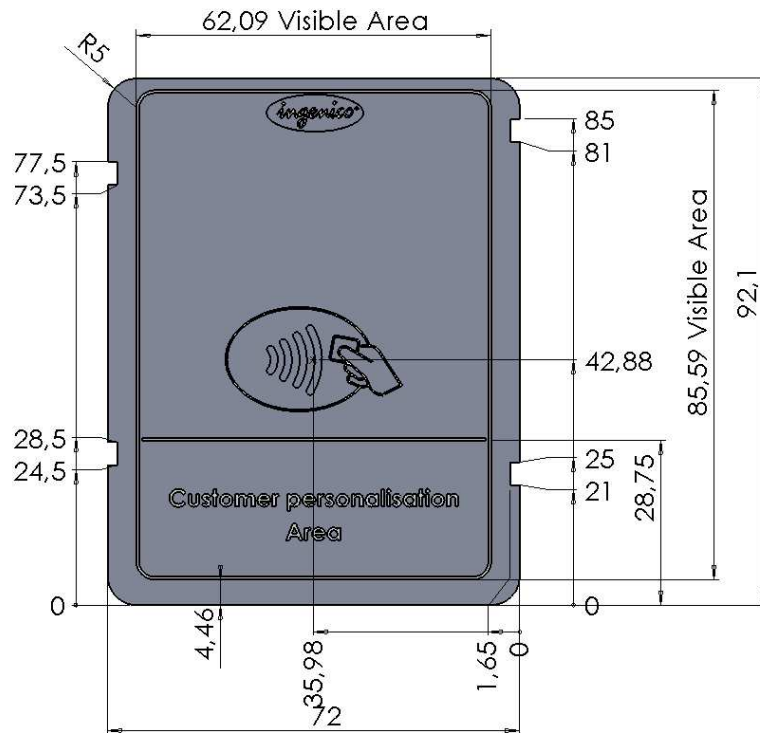
### 1.3.2.8 Appearance personalisation

- 1 Remove the 4 CHC M4 X 10 screws.
- 2 Dismount the front cover
- 3 Put the film as shown in the pictures.
- 4 Screw the front cover with 1mN torque.

6 fixings of the film



Film snap in



Film Dimensions for iUC150 (2D drawing at your disposal for serigraphic process)

**Warning:**

The film must not use **metal or conductive** ink.

**1.3.2.9 Contactless reader iUC150 and i9500 interconnectivity**

Connection between the iUC150 and i9500 is done through RS232. Plug the RS232 cable on iUC150 and i9500 with an Ingenico RS232 cable. Use the power supply and cable adapter to power the iUC150.

RS232 iUC150 Kit (296138220) contains:

PACK BA MULTI EU/US/UK 5V 1A JACK SP	192011323
Serial cable	296137294
Adapter cable USB B iUC150	296135469

**Warning :**

iUC150 have to be grounded to respect EMC.

## 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.

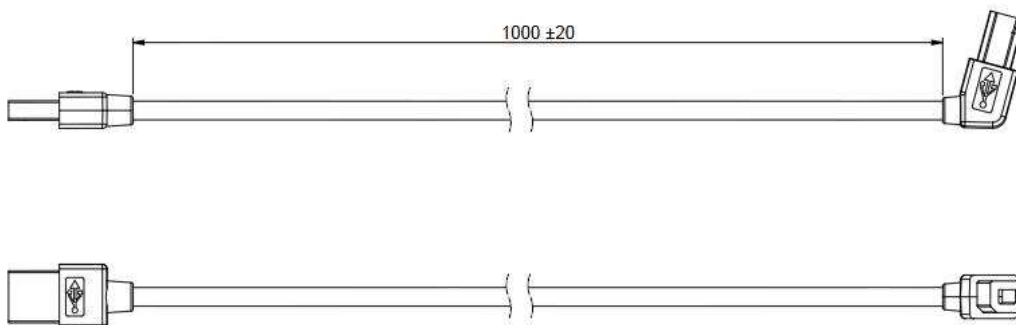
## 2 MAIN ACCESSORIES

### 2.1.1 Generality

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

### 2.1.2 Optional USB cable

An optional USB cable (spare part reference 296129367) with short right-angle overmolded connectors can be purchased as an accessory. This cable is designed to optimize the required volume for iUC180 & iUC150 installation in the kiosk and allows the use of the cable sleeve.





### 2.1.3 iUC150 Power supply

Ingenico power supply can be ordered under reference 192017549 (only for 0 to 40°C use)

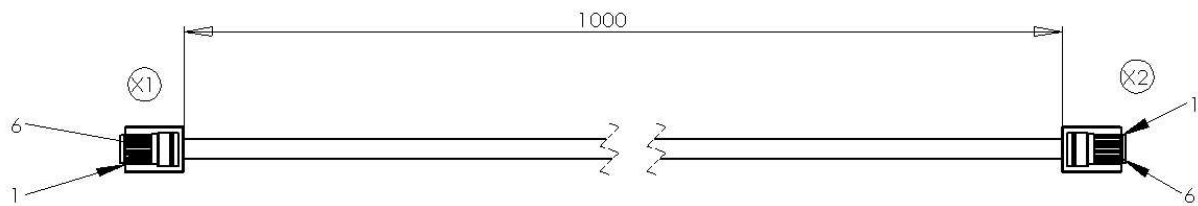
Input: Main voltage supply ranging from 100V to 240V

Maximum current of 3A

Working frequency range between 47Hz and 63Hz

Output: Regulated DC voltage 12V

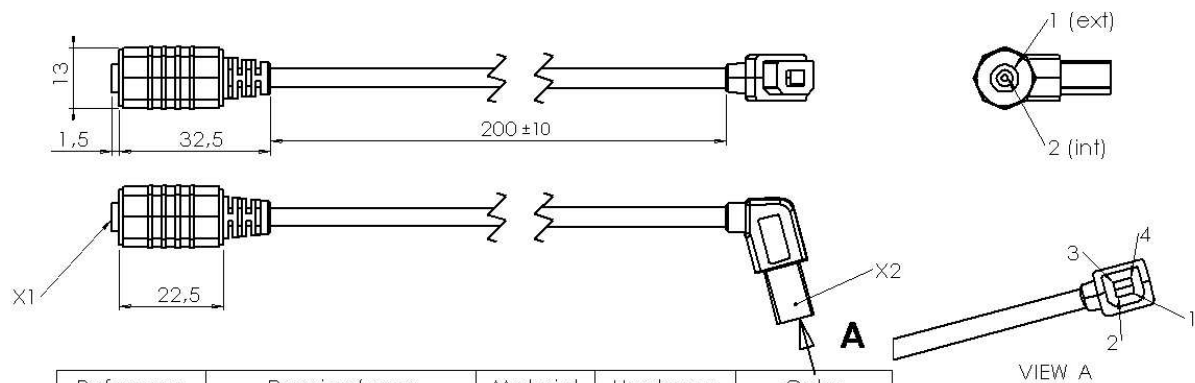
### 2.1.4 Serial cable



Reference	Drawing/spec	Material	Hardness	Color
X1 and X2	Modular plug 6-6 adapted for round cable			

Gauge	Comments	Departure	Outline	Arival	Comments	Gauge
		X1		X2		
AWG28	GND	1		1	GND	
	CTS	2		2		
AWG28	RTS	3		3	RXD	
AWG28	RX	4		4	TXD	
AWG28	TX	5		5	CTS	
	VCC	6		6	RTS	

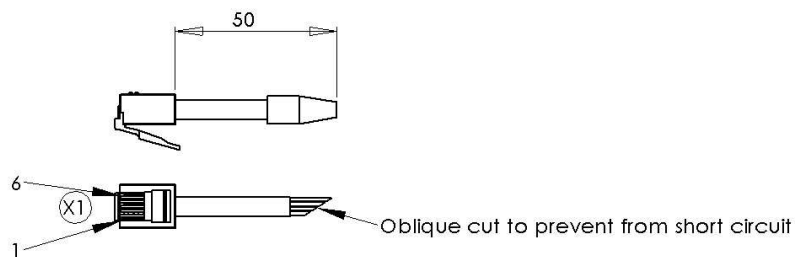
## 2.1.5 Adapter cable



Reference	Drawing/spec	Material	Hardness	Color
X1	DC power jack 1.35 X3.5 X 10			
X2	USB B			

Gauge	Comments	Departure	Outline	Arival	Comments	Gauge
		X1		X2		
		1		1	VCC	
AWG22		2		2		
AWG22				3		
				4	GND	
				5	Shield	

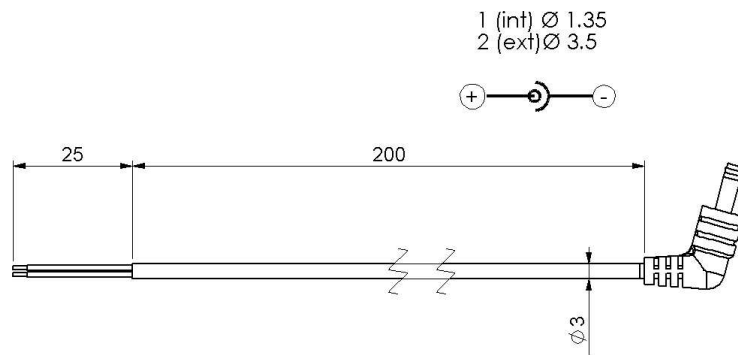
## 2.1.6 LLT cable



Reference	Drawing/spec	Material	Hardness	Color
X1	Modular plug 6-6 adapted to cable profile			

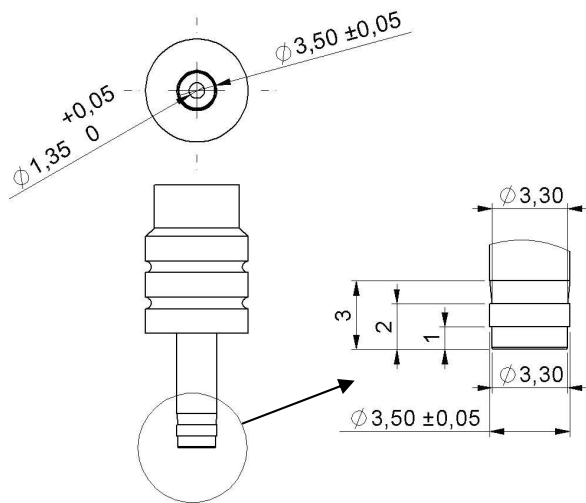
Gauge	Comments	Departure	Outline			
		X1				
	GND	1				
	Wake-up	2				
	RXD	3				
	TXD	4				
	CTS	5				
	RTS	6				

## 2.1.7 Stand-by management cable



Wire reference mark	Length (mm)	Comments	Departure point	Outline	Arrival point	Comments
					J1	
AWG 22		+		=====	1	+
AWG22		GND		=====	2	GND

Definition of the jack connector:



### 3 IUC180/IUC150 SOFTWARE

*The system unit, equipped with Telium2<sup>®</sup> technology, is designed with a structure supporting several applications without any mutual interference.*

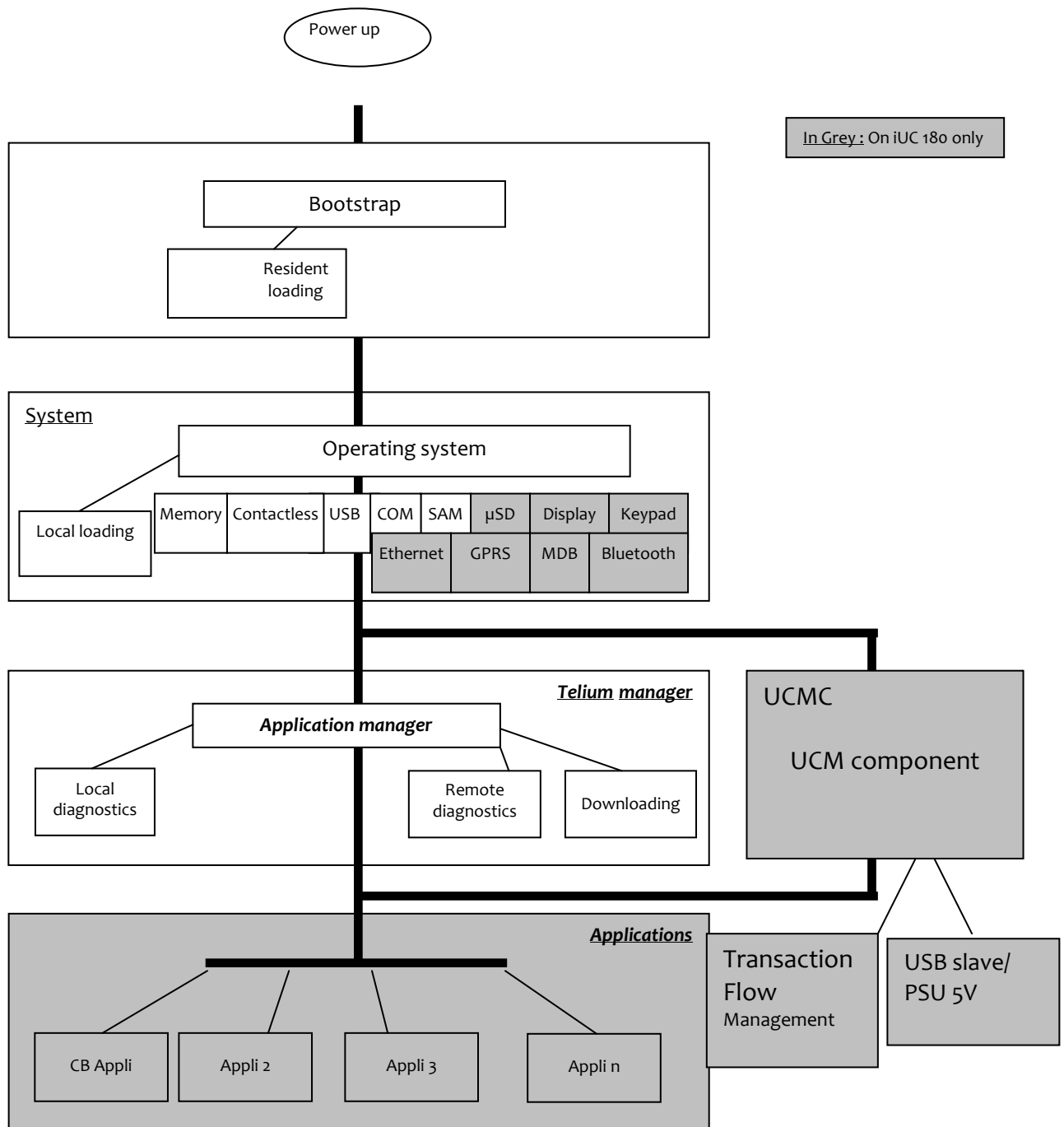
*The operating system is a multi-task, real time, preemptive system.*

*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



The software architecture is divided into levels:

- System
- Multi-application manager
- Universal Controller Module Component (UCMC) for iUC180
- Independent applications for iUC180

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 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 on iUC180 only

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

For iUC150:

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

For iUC180:

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 (iUC180 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 (iUC180 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 iUC180 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  
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 power on.
  - 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 (iUC180 only)  
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 iUC180 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 (iUC180 only)**

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 1.4 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) or by X25 (TRANSPAC, in France) 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:

iUC180	iUC150
Trigger the LLT software on the PC	
Switch off the product	
Connect the PC to the COM or slave USB connector.	Insert the LLT cable in the COM port of the iUC150.
Press the rear button and switch on the iUC180.	Connect the PC to the slave USB connector.
When the LED near the button becomes fix red, release the button. "LLT" text is now displayed on screen.	Wait 3 seconds.
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 (iUC180)

### 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 M<sup>2</sup>OS 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 iUC180: 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.

## 4 TERMINAL MANAGEMENT SYSTEM (IUC180)

### 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.

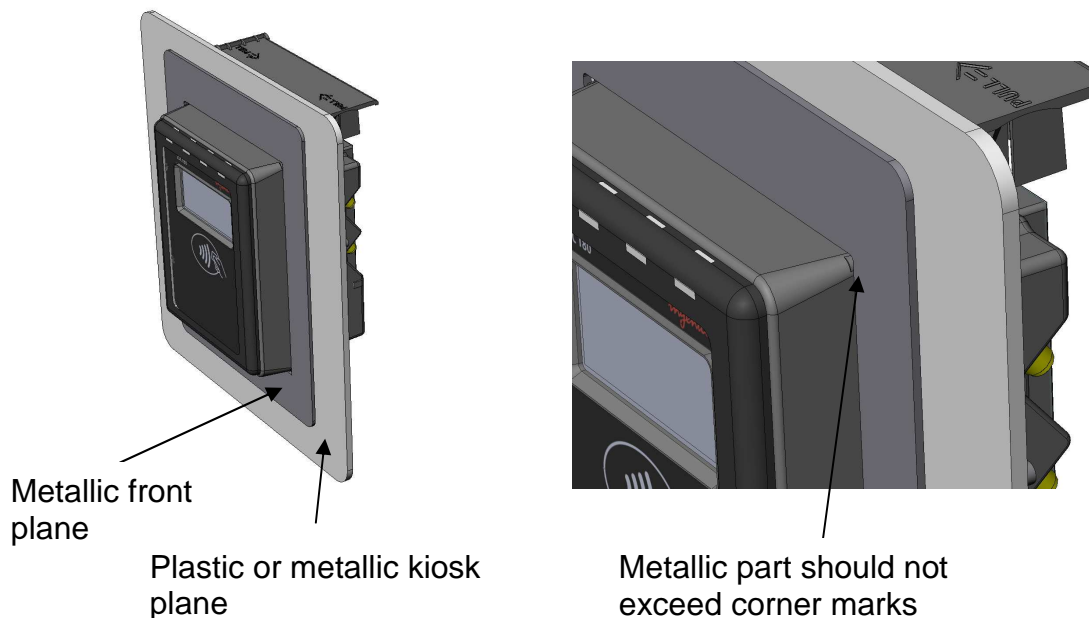
### 5.1 KIOSK MECHANICAL REQUIREMENTS

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. This is very important for Contactless performance.

**With a metallic kiosk panel more than 5mm thick or with metal parts near the antenna, the performance may not be correct.**



### 5.2 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.



### 5.3 KIOSK SUGGESTED LAYOUTS FOR IUC150 IUR250 IUP250

Some propositions are provided by ingenico to optimise unattended modules integration. See specific document “iUP250 iUR250 integration guide”.

## 6 ASSEMBLY PROCEDURE FOR IUC180 AND IUC150

### 6.1 KIOSK MINIMUM VOLUME FOR IUC180

The iUC180 requires a minimum volume inside the kiosk. It is detailed in the drawing below.

3D design on demand.

The minimum volume is 120 mm width x 134 mm height x 39 mm deep.



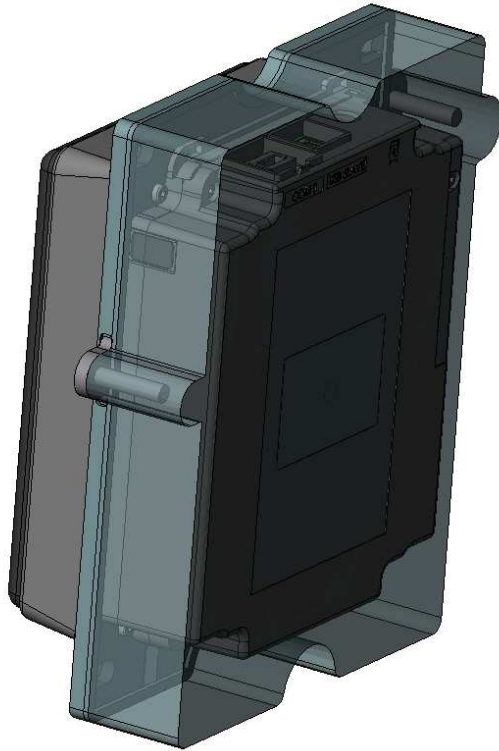
**Picture of iUC180 minimum volume**

## 6.2 KIOSK MINIMUM VOLUME FOR IUC150

The iUC150 requires a minimum volume inside the kiosk. It is detailed in the drawing below.

3D design on demand.

The minimum volume is 120 mm width x 134 mm height x 27 mm deep.



### 6.3 KIOSK PREPARATION FOR IUC150 OR 180 NEW INSTALLATION

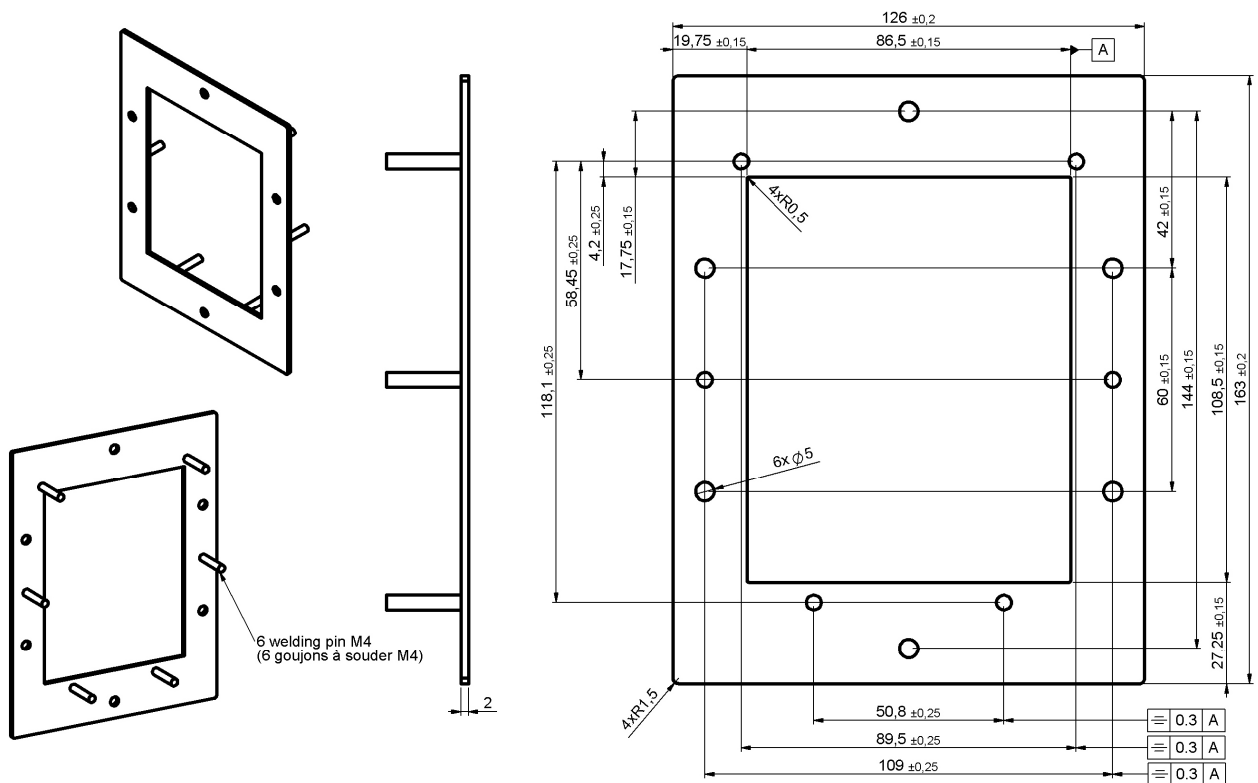
iUC150 and iUC180 use EVA mounting standard. It requires a cut out in the kiosk to the dimensions detailed in the diagram below (all dimensions are in millimeters). The drawing below shows the footprint of iUC150/iUC180 products.

**CAUTION:**

It is important that the iUC150/iUC180 footprint surface on the kiosk must be flat and cleared of any holes and burrs to prevent from dust and water penetration in the kiosk. (IP64 standard)

3D step files are also available upon request.

Fixing must be done by 4 M4x16mm welded studs.



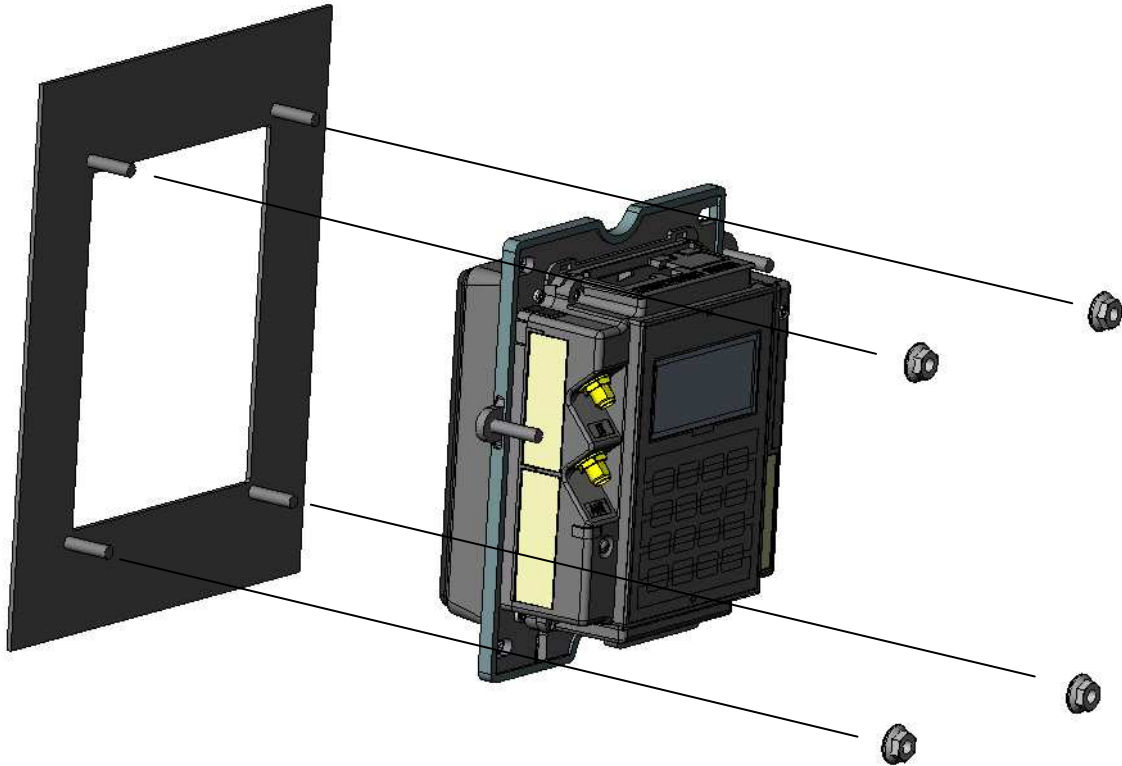
Drawing of the cut-out for the iUC150 or iUC180 3D design on demand.

## 6.4 INSTALLING THE IUC150/IUC180 IN NEW KIOSK

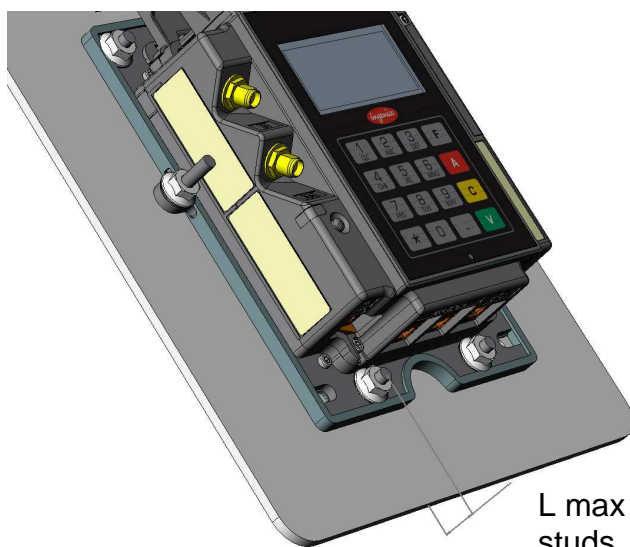
iUC150/iUC180 requires standards hexagonal nuts for integration into a kiosk.

Screw the 4 nuts M4 with a 1.0 N.m torque.

It is recommended to use washers.



Picture showing a new installation of the iUC180 or iUC150



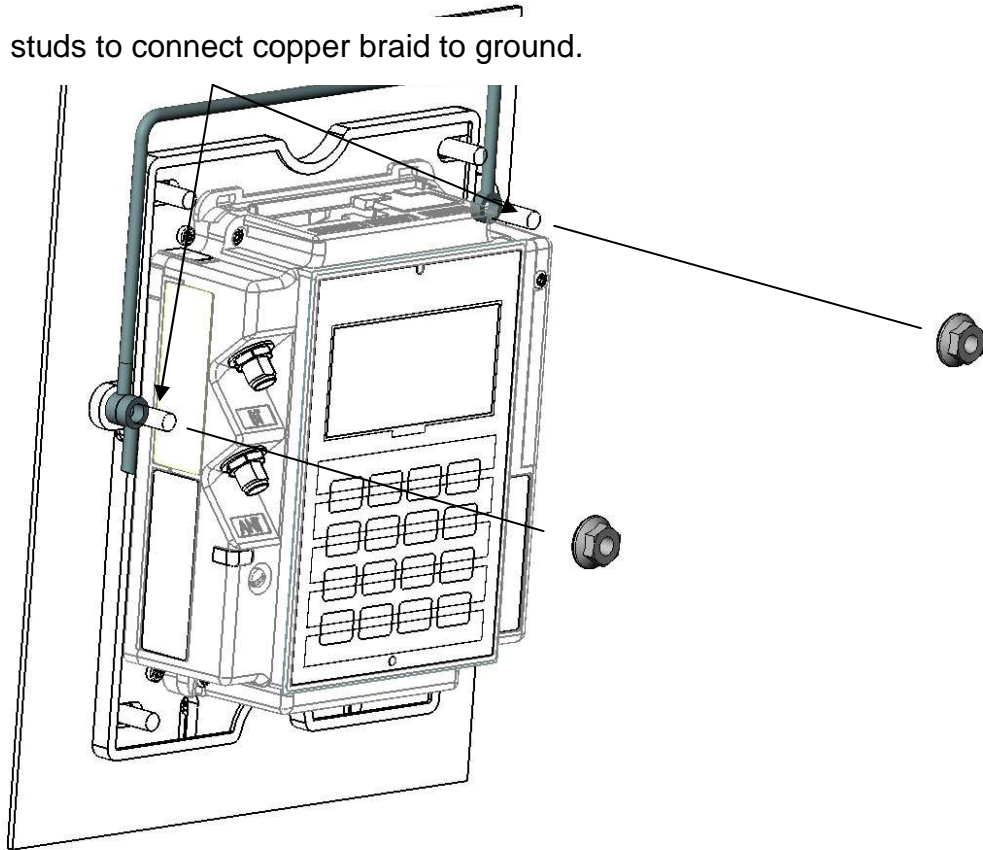
Mounting with 6 studs is possible.  
The two middle studs will not be  
screwed.  
For connectors access, limit the stud  
length at  $L_{max} = 11.5\text{mm}$  on both back  
studs

L max of the 2 back  
studs

Installation of the iUC180 or iUC150 with 6 studs position

## 6.5 CONNECTING THE IUC180 OR 150 TO THE KIOSK GROUND

Ground studs to connect copper braid to ground.



**Picture showing the grounding of the iUC180**

To insure good connexion of iUC180 or iUC150 to the kiosk ground, it is recommended to install one copper braid connecting the 2 grounding studs and connect this braid to the chassis.

### **Kiosk mechanical requirements**

See chapter 5.1

## 7 MAINTENANCE

### 7.1 CONFIGURATION

The iUC180 & iUC150 supplied to you has operational configuration loaded. In factory, software is loaded in the iUC180 & iUC150, as well as parameter definition files.

#### For iUC180:

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.

### 7.2 OPERATING LIFE

Minimum operating life of 5 years.

## 8 CLEANING INSTRUCTIONS

The external front face of the contactless reader should be carefully cleaned on a regular basis.

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.
- The glass has special surface treatment but must be carefully clean.
- 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.

# 9 DISASSEMBLING THE PRODUCTS ACCORDING TO WEEE DIRECTIVE

## 9.1 IUC180 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 <i>Nom du produit</i>	Product description <i>Description du produit</i>	Product mass (g) <i>Masse du produit (g)</i>
IUC180	Unattended payment PINPad	680g

### 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 <i>Composants et matériaux</i>	Quantity included in product(s) <i>Quantité contenue dans le(s) produit(s)</i>
<b>Capacitors containing Polychlorinated biphenyls (PCB)</b> <i>Condensateurs contenant du polychlorobiphényle (PCB)</i>	0
<b>Components containing Mercury, such as switches or backlighting lamps</b> <i>Composants contenant du mercure, tels que les interrupteurs ou les lampes à rétroéclairage</i>	0
<b>Batteries</b> <i>Piles et accumulateurs</i>	1
<b>Printed circuit boards greater than 10 cm<sup>2</sup></b> <i>Cartes de circuits imprimés de plus de 10 cm<sup>2</sup></i>	4max (2 + 2)
<b>Toner cartridges</b> <i>Cartouches de toner</i>	0
<b>Plastic containing brominated flame retardants</b> <i>Matières plastiques contenant des retardateurs de flamme bromés</i>	0
<b>Asbestos waste and components which contain asbestos</b> <i>Déchets d'amiante et composants contenant de l'amiante</i>	0
<b>Cathode ray tubes</b> <i>Tubes cathodiques</i>	0
<b>Chlorofluorocarbons (CFC), Hydrochlorofluorocarbons (HCFC) or Hydrofluorocarbons (HFC), Hydrocarbons (HC)</b> <i>Chlorofluorocarbones (CFC), hydrochlorofluorocarbone (HCFC) ou hydrofluorocarbone (HFC), hydrocarbures (HC)</i>	0
<b>Gas discharge lamps</b> <i>Lampes à décharge</i>	0
<b>Liquid crystal displays (LCD) of a surface greater than 100 cm<sup>2</sup> and all those back-lighted with gas discharge lamps</b> <i>Écrans à cristaux liquides (LCD) d'une surface supérieure à 100 cm<sup>2</sup> et tous les écrans rétroéclairés par des lampes à décharge</i>	0

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<b>External electric cables</b> <i>Câbles électriques extérieurs</i>	<b>0</b>
<b>Components containing refractory ceramic fibres</b> <i>Composants contenant des fibres céramiques réfractaires</i>	<b>0</b>
<b>Components containing radioactive substances</b> <i>Composants contenant des substances radioactives</i>	<b>0</b>
<b>Electrolyte capacitors measuring greater 2,5 cm in diameter or height</b> <i>Condensateurs électrolytiques mesurant plus de 2,5 cm de diamètre ou de hauteur</i>	<b>0</b>

### 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.*

<b>Step</b> <i>Etape</i>	<b>Product disassembly process</b> <i>Processus de démontage du produit</i>
1	<b>Remove the 4 screws of front casing and of the rear cover</b> <i>Oter les 4 vis du capot avant et du capot arrière</i>
2	<b>Remove the cover, remove the FPC</b> <i>Oter le capot, ôter le FPC.</i>
3	<b>Remove the 4 screws on the extension card. Lift the card, disconnect the FPC below. Remove the extension card.</b> <i>Oter les 4 vis sur la carte d'extension, Soulever la carte d'extension et déconnecter le FPC dessous. Oter la carte extension.</i>
4	<b>Remove the battery from extension card</b> <i>Oter la pile de la carte extension.</i>
5	<b>Remove the 4 screws on the plastic spacer. Remove the plastic spacer, the rear metal plate, the plastic antenna holder</b> <i>Oter les 4 vis maintenant l'entretoise plastique. Oter l'entretoise plastique, puis la tôle arrière, puis le support plastique de l'antenne</i>
6	<b>Remove the keypad card and the displays.</b> <i>Oter la carte clavier et les afficheurs</i>



## 9.2 IUC150 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'Équipements Électriques et Électroniques (DEEE).*

### 4. MODELS AND DESCRIPTIONS

#### MODÈLES ET DESCRIPTIONS

**Products covered by this disassembly instructions.**

*Produits concernés par ces instructions de démontage.*

Product Name <i>Nom du produit</i>	Product description <i>Description du produit</i>	Product mass (g) <i>Masse du produit (g)</i>
IUC150	unattended electronic payment reader	550g

### 5. COMPONENTS AND MATERIALS REQUIRING SELECTIVE TREATMENT

#### COMPOSANTS ET MATÉRIAUX 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 <i>Composants et matériaux</i>	Quantity included in product(s) <i>Quantité contenue dans le(s) produit(s)</i>
<b>Capacitors containing Polychlorinated biphenyls (PCB)</b> <i>Condensateurs contenant du polychlorobiphényle (PCB)</i>	0
<b>Components containing Mercury, such as switches or backlighting lamps</b> <i>Composants contenant du mercure, tels que les interrupteurs ou les lampes à rétroéclairage</i>	0
<b>Batteries</b> <i>Piles et accumulateurs</i>	1
<b>Printed circuit boards greater than 10 cm<sup>2</sup></b> <i>Cartes de circuits imprimés de plus de 10 cm<sup>2</sup></i>	2
<b>Toner cartridges</b> <i>Cartouches de toner</i>	0
<b>Plastic containing brominated flame retardants</b> <i>Matières plastiques contenant des retardateurs de flamme bromés</i>	0
<b>Asbestos waste and components which contain asbestos</b> <i>Déchets d'amiante et composants contenant de l'amiante</i>	0
<b>Cathode ray tubes</b> <i>Tubes cathodiques</i>	0
<b>Chlorofluorocarbons (CFC), Hydrochlorofluorocarbons (HCFC) or Hydrofluorocarbons (HFC), Hydrocarbons (HC)</b> <i>Chlorofluorocarbones (CFC), hydrochlorofluorocarbone (HCFC) ou hydrofluorocarbone (HFC), hydrocarbures (HC)</i>	0
<b>Gas discharge lamps</b> <i>Lampes à décharge</i>	0
<b>Liquid crystal displays (LCD) of a surface greater than 100 cm<sup>2</sup> and all those back-lighted with gas discharge lamps</b> <i>Écrans à cristaux liquides (LCD) d'une surface supérieure à 100 cm<sup>2</sup> et tous les écrans rétro éclairés par des lampes à décharge</i>	0
<b>External electric cables</b> <i>Câbles électriques extérieurs</i>	0
<b>Components containing refractory ceramic fibres</b> <i>Composants contenant des fibres céramiques réfractaires</i>	0
<b>Components containing radioactive substances</b> <i>Composants contenant des substances radioactives</i>	0
<b>Electrolyte capacitors measuring greater 2,5 cm in diameter or height</b> <i>Condensateurs électrolytiques mesurant plus de 2,5 cm de diamètre ou de hauteur</i>	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.*

<b>Step</b> <i>Etape</i>	<b>Product disassembly process</b> <i>Processus de démontage du produit</i>
1	<b>Remove the 4 screws of front casing and of the rear cover</b> <i>Oter les 4 vis du capot avant et du capot arrière</i>
2	<b>Remove the cover</b> <i>Oter le capot</i>
3	<b>Remove the 4 screws on the extension card. Lift the card, disconnect the FPC below. Remove the extension card.</b> <i>Oter les 4 vis sur la carte d'extension, Soulever la carte d'extension et déconnecter le FPC dessous. Oter la carte extension.</i>
4	<b>Remove the battery from extension card</b> <i>Oter la pile de la carte extension.</i>
5	<b>Remove the 4 screws on the plastic spacer. Remove the plastic spacer, the rear metal plate, the plastic antenna holder</b> <i>Oter les 4 vis maintenant l'entretoise plastique. Oter l'entretoise plastique, puis la tôle arrière, puis le support plastique de l'antenne</i>

## 10 STANDARDS

### 10.1 IUC 150 ELECTRICAL CONSUMPTIONS

- Average consumptions device waiting for host solicitation (5 VDC input.):
  - Less than 50 mA
  - Value measured for Power supply 5V at 25°C
- Maximum average external supply current (5 VDC input.):
  - Less than 500 mA
  - Value measured for Power supply 5V at 25°C
- Maximum consumption in stand-by mode (5 VDC input.):
  - Less than 50µA
  - Value measured for Power supply 5V at 25°C

### 10.2 IUC 180 ELECTRICAL CONSUMPTIONS

- Average consumptions device waiting for host solicitation (12 VDC input.):
  - Less than 120 mA
  - Value measured for Power supply 5V at 25°C
- Maximum average external supply current (12 VDC input.):
  - Less than 2500 mA
  - Value measured for Power supply 5V at 25°C
- Maximum consumption in stand-by mode (12 VDC input.):
  - Less than 400 µA
  - Value measured for Power supply 5V at 25°C

### 10.3 TEMPERATURE AND HUMIDITY

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

### 10.4 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 IP64 for iUC180 and iUC150 (outside the kiosk).

- Drop:
  - Drop 1m on concrete surface all faces

## 10.5 EC STANDARD COMPLIANCE MARKING

EC standard compliance marking certifies that the product stipulated below:

iUC180

iUC150

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

## 10.6 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 (2586D-IUC18XWD) 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 (2586D-IUC18XWD) 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.

## 10.7 FCC STATEMENT

FCC standard compliance marking certifies that the product stipulated below:

iUC180

iUC150

- 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.

## 10.8 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.

**\*296146**