# WORLDLINE

# iSelf Vending Classic

Digital Payments
for a Trusted World

# Content

# 1 Introduction

iSELF is a cashless payment solution comprising both hardware and software components, designed by the INGENICO Group (hereinafter "INGENICO") to integrate payment functionality into self-service devices or terminals, such as vending machines, fuel pumps, ticket machines, kiosks, etc. (hereinafter the "Terminal[s]").

Products in the iSELF range are only intended to be installed in Terminals by manufacturers or integrators responsible for the complete assembly of such devices (hereinafter the "Partner[s]"). INGENICO Partners, who are qualified professionals specializing in their particular area of activity, have specific know-how and a high level of technical knowledge as regards integrating cashless payment solutions into their Terminals.

These guidelines are intended as a reminder of good practice and set out the rules applicable to all our Partners with regard to integrating iSELF into their Terminals.

## 1.1    iSELF VENDING CLASSIC PAYMENT SOLUTION PRESENTATION

The iSelf Series is the new range of Ingenico unattended devices to offer payment into any kiosk through any segments (petrol, transport, vending, parking, etc.). The terminal solution consists of the following modules used for PIN management, contact cards and contactless cards:

• PIN pad,             the iUP250LE
• Hybrid card reader,  the iUR250
• Contactless reader, the iUC150B

These compact devices are designed to fit everywhere, thanks to an easy installation, respectful of EVA standard (iUP250) and Compact door standard (iUR250, iUC150B). Usage can be indoor or outdoor, resisting to harsh environment.

Additional peripherals can be added to build a complete solution such as printer or bar code reader. Ingenico does not provide these devices as such but they can be connected to the iUP250 (through, USB, or RS232).

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

Remarks:
The iSelf Series is the latest generation of Ingenico leveraging of experience from previous product ranges, i9500 series or CAD30 series, to renew your experience of unattended payment.

## 1.2    DIAGRAM OF IUP250LE CONNECTIVITY AND COMMUNICATIONS
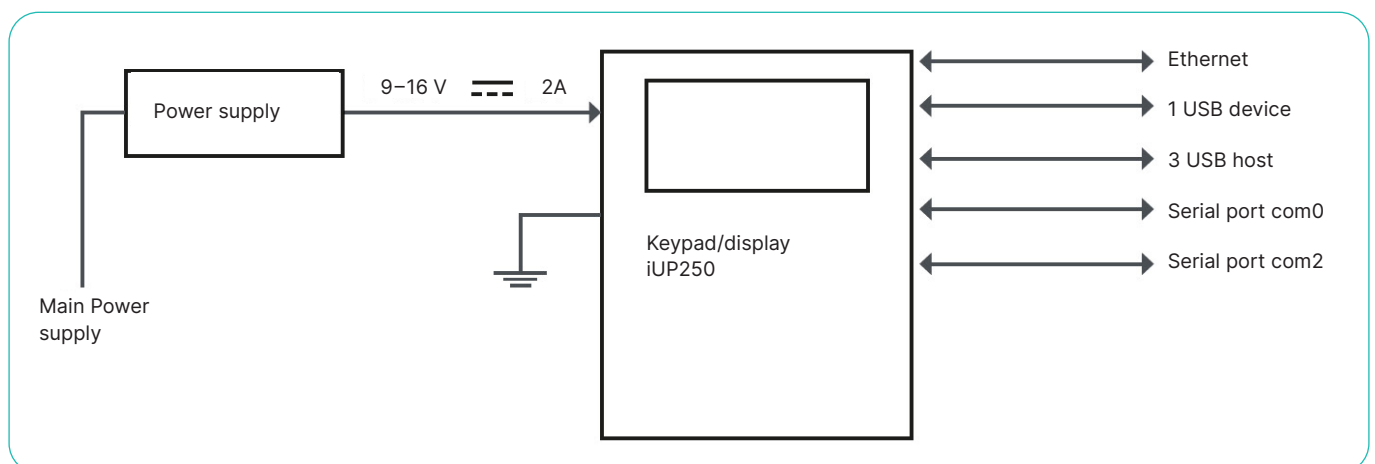


The terminal with its modules is centrally powered through the "Power" connector of the iUP250LE. The readers are powered through the USB Host connection.

# 2  Description of modules

## 2.1    iUP250LE – PIN PAD



Front view                                                    Rear view
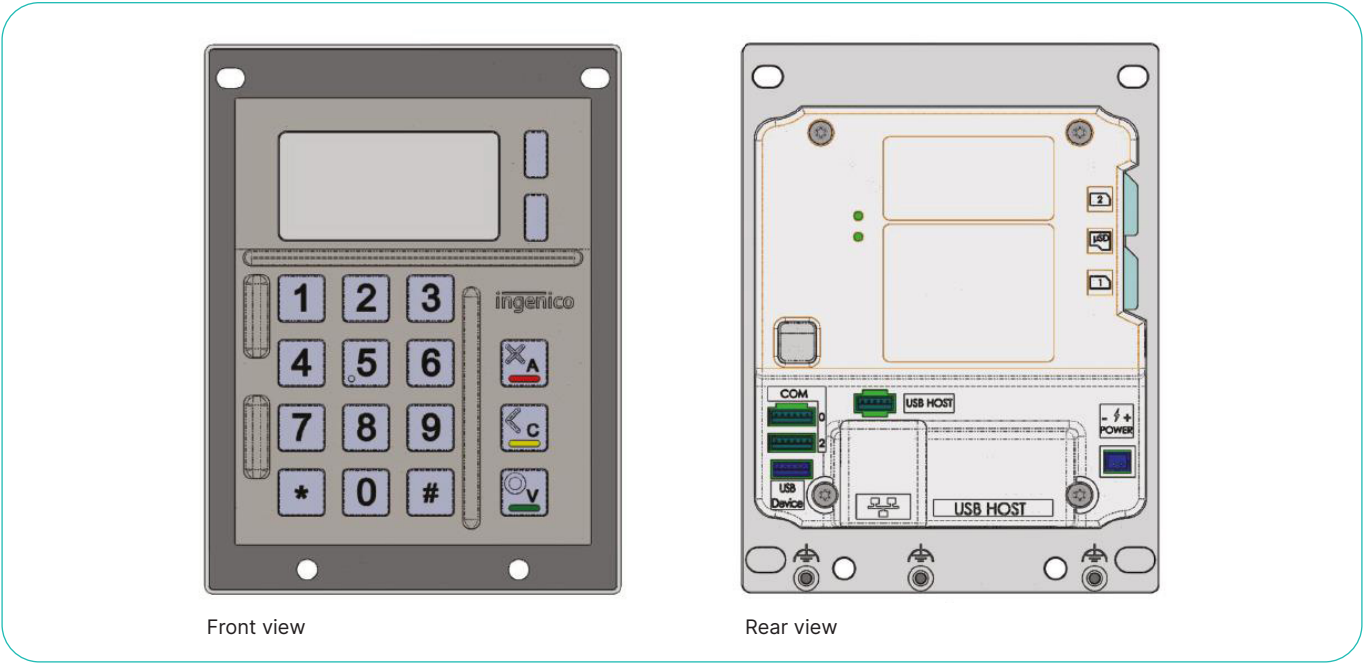
The target keyboard layout of the iUP250LE has got the command keys with the characters OK, CLR, STP.

### 2.1.1   iUP250LE TECHNICAL CHARACTERISTICS

| | |
|---|---|
| **Mass** | 860 g |
| **Dimensions** | (height × width × depth)<br>134 × 101 × 32 mm (w/o Ethernet connectivity)<br>134 × 101 × 39 mm (w/Ethernet connectivity |
| **Power supply** | 9–16 V Max ⎓ 2 A |
| **Platform** | Telium 2 |
| **Memory** | 32 Mb SDRAM and 128 Mb Flash |
| **Functionality** | Keys: 17 metallic keys<br>128 × 64 graphic display<br>RGB Backlight<br>Buzzer<br>RGB led internal status indicator<br>1 Maintenance Button<br>µSD<br>2 SAM | 1 Jack for external lighting<br>wake-up mechanism on RS232 connectors |
| **Link** | Ethernet<br>3 USB host (1.5 A total max)<br>1 USB device<br>2x RS232 |

## 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 |

\* 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 |

## 2.1.2  iUP250LE OUTPUT CONNECTORS DESCRIPTION
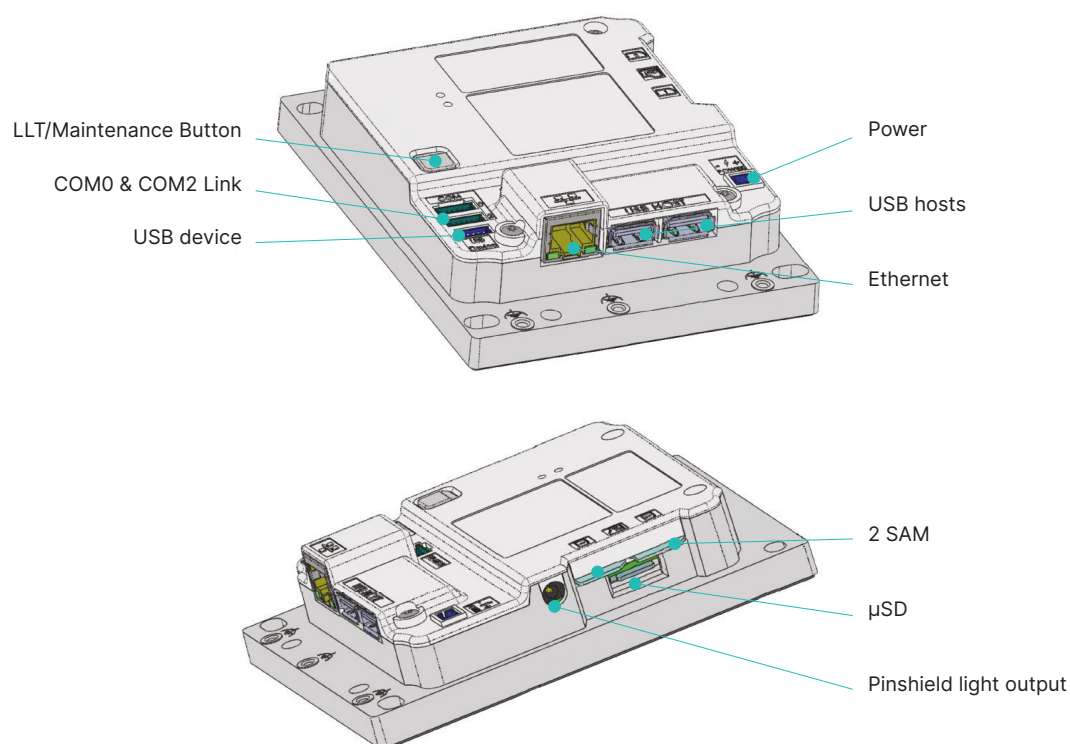
### Ethernet
- The iUP250 PINPad unit can be connected to Ethernet. The connector type is shielded RJ45.
- The Ethernet cable is standard and not provided.
- The Ethernet cable must be shielded.

### USB device
The iUP250LE unit can be connected by a JST low profile connector.

### USB host
The iUP250LE unit can drive 3 USB accessories. The connector are standard type A (x2) and 1 JST low profile connector. The power available is limited to 1.5 A Max dispatched between the 3 USB.

### PIN shield light output

| PIN No | Function | |
|---|---|---|
| 1 | 5 V | |
| 2 | HZ | Light off |
| | "0" | Light on |

Pin 1 (center)
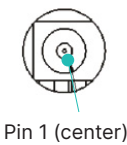
### RGB backlight
The iUP250LE has a RGB backlight controlled by applications.

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

The iUP250LE 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.

### Buzzer
The buzzer is controlled by the application. The frequency depends on the software.

The iUP250LE PIN pad unit can be connected to a serial port. The connector type JST.

| PIN No | Function |
|---|---|
| 1 | GND |
| 2 | Wake-up |
| 3 | RXD |
| 4 | TXD |
| 5 | CTS |
| 6 | RTS |
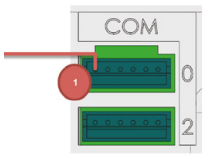
## 2.1.3  WAKE-UP MECHANISM

The iUP250LE and the terminal is designed to save power thanks to a "stand-by and sleep mode".
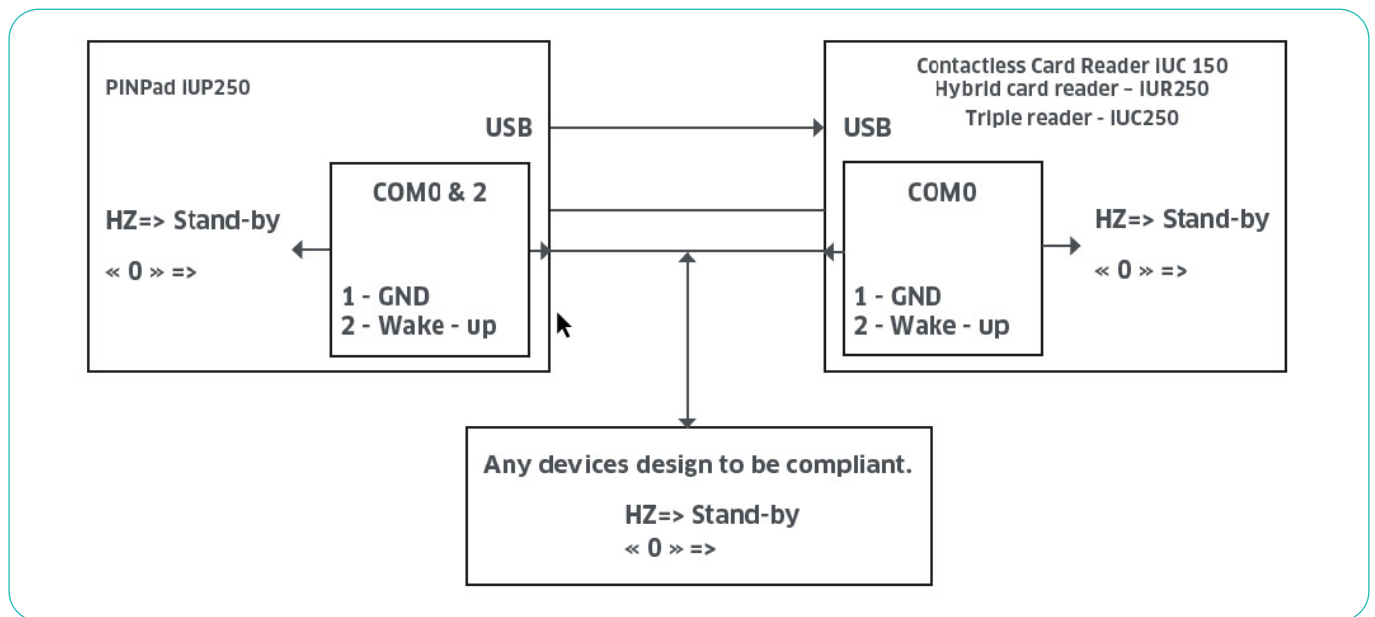
If the stand-by mode is used, use the wake-up mechanism:
• With button connected on jack (optional)
• With Pin 2 of COM0 link & COM2 link
• By pressing the "OK" key on keyboard

The wake-up pin is driven to "0" by the one asking the wake-up.

It could be driven by any iSelf Series module or any devices designed to be compliant (Host device...).

### Wake-up wiring



### Recommended circuit implementation – example of iUP, iUR and iUC
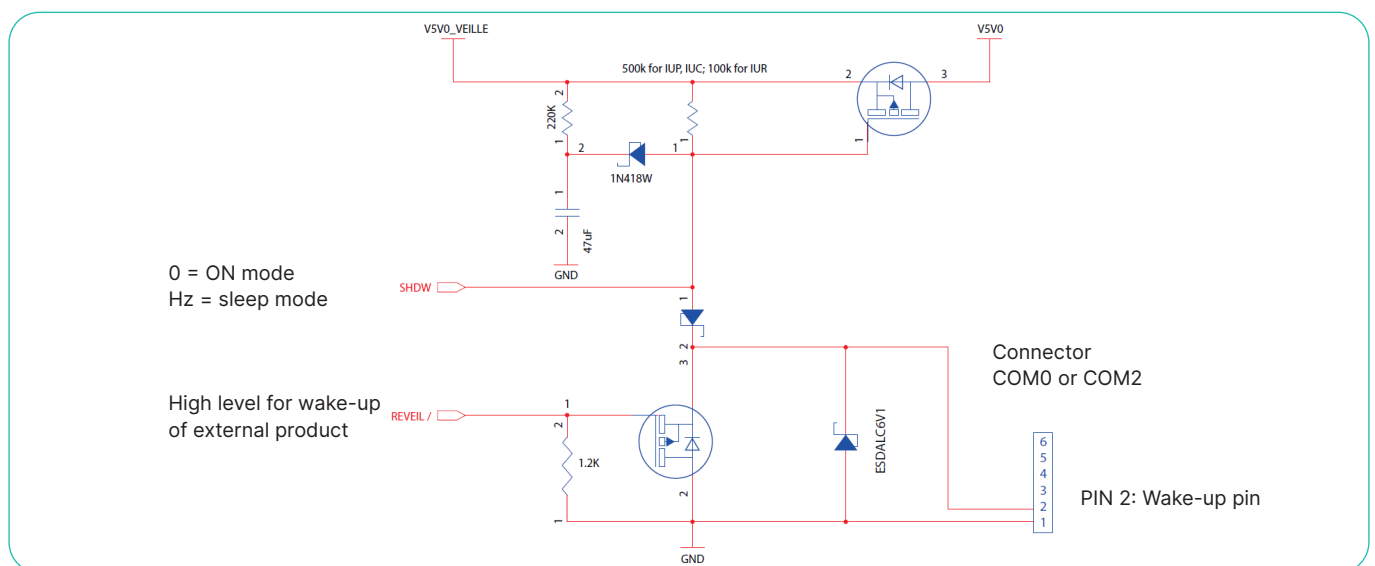


The wake-up pin must be high impedance. Do not connect directly any voltage on this pin even if the devices are 10 V tolerant.

The voltage on this pin must not exceed 10 V in any case. As the pin is high impedance in Stand-by mode, any leakage current can wake-up the configuration.

## 2.2   iUR250 – HYBRID CARD READER

Front view

Rear view

USB Device

Wake-up

### 2.2.1  iUP250LE TECHNICAL CHARACTERISTICS

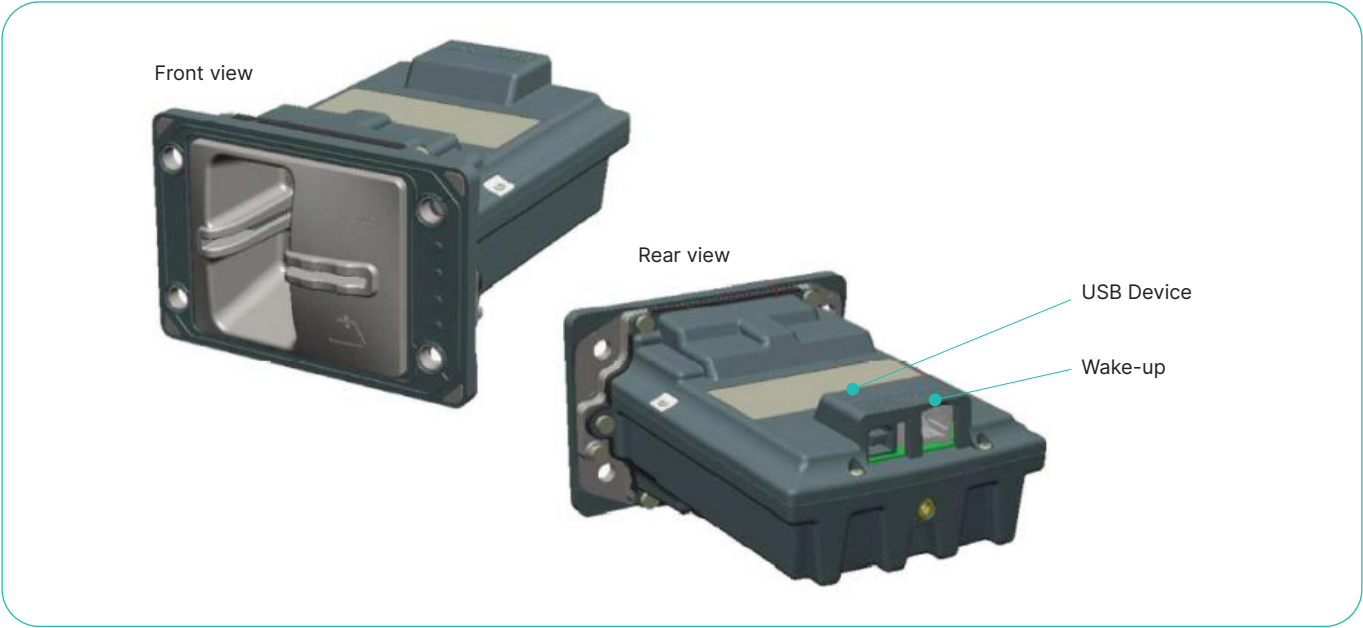| | |
|---|---|
| Mass | 700 g without cable |
| Dimensions | 148 × 108 × 73 mm (depth × width × height) |

#### 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 5 V ⎓ 500 mA |
| Platform | Telium 2 |
| Card interface | EMV level 1 and ISO 7816 (read & write)<br>T=0, T=1 and synchronous cards<br>Magnetic stripe: ISO 1/2/3 (read only) |
| Functionality | Buzzer<br>RGB led indicator<br>Lever lock (optional) |
| Link | USB device<br>RS232 connection only for wake-up mechanism |

#### Storage conditions

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

### USB device
iUR25x reader unit can be connected by typ A USB.

### Wake-up mechanism
iUR25x is design to save power thanks to a "stand-by mode".

To wake-up iUR25x, 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 iUR25x, iUP250 or any devices designed to be compliant (Host device...)
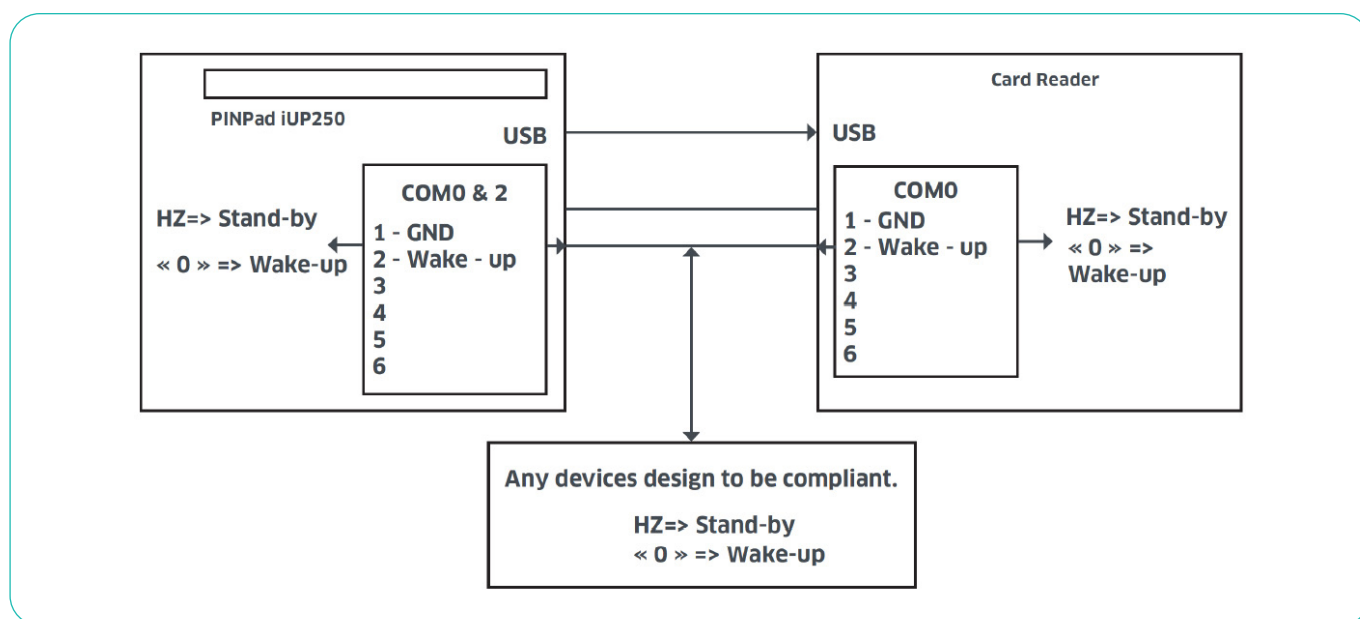


### COM0 link
The iUR25x serial port COM0 is only available for debug feature and to manage wake-up mechanism.
The connector type is RJ11.

| PIN No | Function |
| --- | --- |
| 1 | GND |
| 2 | Wake-up |
| 3 | RXD (not for customer use) |
| 4 | RXD (not for customer use) |
| 5 | RXD (not for customer use) |
| 6 | RXD (not for customer use) |



Pin 6    Pin 1
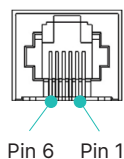
## 2.2.2 RGB LEDS

The iUR25x 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:
  product is out of order (Commissioning needed).
- Red led flashing quickly:
  product is out of order (not compatible w/ iUP SW version).

## 2.2.3 OPTIONAL LEVER LOCK

The Lever lock is controlled by application.

It may be used to forbid the withdrawal of the card during chip access.

> **Note:**
> A mechanical mechanism in the reader component permits to extract the smart card, with an extraction force arount 30N to avoid permanent card blocking.

## 2.2.4 PIN PAD AND READER iUR250 INTERCONNECTIVITY

The connection between the iUP250LE and the reader iUR250 is done through USB.

Plug the USB cable on the iUP250LE and the iUR250 with the Ingenico standard USB cable USB-A – USB-B with the part number 296129367.
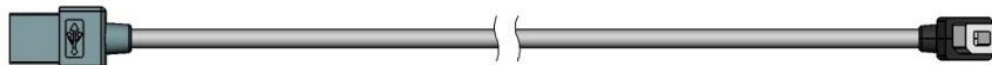


## 2.3    iUC150B – COMPACT CONTACTLESS READER

## 2.3.1 PRODUCT VIEWS

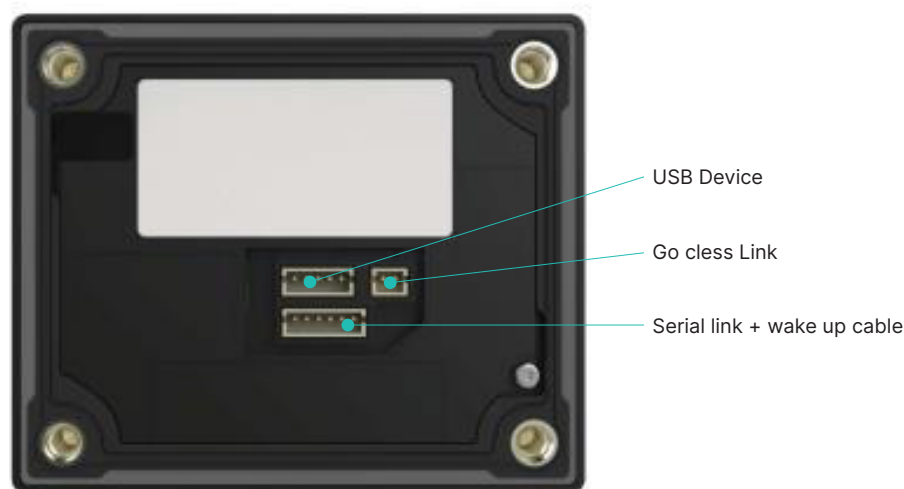### 2.3.2  iUC150B OUTPUT CONNECTORS DESCRIPTION

USB Device

Go cless Link

Serial link + wake up cable

### 2.3.3  iUC150B TECHNICAL HARDWARE CHARACTERISTICS

| | |
|---|---|
| Mass | 87 g |
| Dimensions | 61 × 73 × 23 mm (height × width × depth) |
| Power supply | 5 V Max --- 500 mA |
| Platform | Telium 2 |
| Functionality | Contactless cards reader<br>Buzzer<br>Go cless link<br>Wake-up + serial link |
| Link | 1x USB device |

### 2.3.4  PIN PAD AND READER iUC150B INTERCONNECTIVITY

The connection between the iUP250LE and the reader iUC150B is done through USB.

Plug the USB cable on the iUP250LE and the iUC150B with the Ingenico standard USB cable USB-A – USB-JST with the part number 296189206 (30 cm, included in the box) or 296192761AB (1.15 m, accessory).

Shrinkable tube

10,20 ±5

15 ±2

B

5

1

VIEW B
SCALE 2 : 1
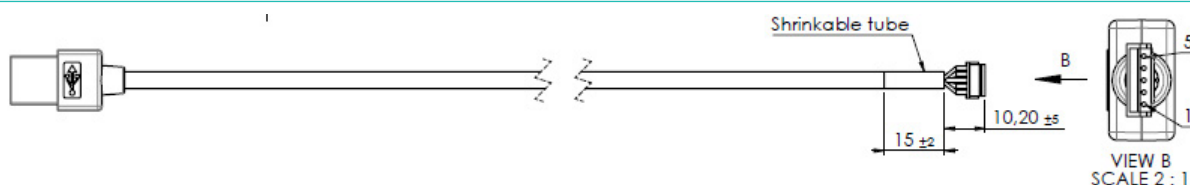
# 3 Installation procedure in kiosks

> **Note:**
> It is required to use ESD-protective clothing while handling these devices. All parts of the kiosk should be connected to the ground using ground cables or ground braid.

## 3.1 SECURITY REQUIREMENTS

The integration must be done to be compliant with the PCI-PTS requirements.

The PIN pad iUP250LE is not equipped with its own privacy shield. Therefore the PIN pad must be integrated in the machine or kiosk in a way to fulfil the requirements for concealed PIN entry.

Ingenico recommends to supply the PIN shield according the specification "EPC343-08 Version 2.0 PRIVACY SHIELDING FOR PIN ENTRY".

If the machine or kiosk doesn't provide such a protection, an Ingenico privacy shield option can be provided.

The iUP250LE must be mounted on the unattended machine as indicated in the installation guide to activate the removal detectors.

## 3.2 GENERAL INSTALLATION RECOMMENDATIONS

- 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 the environmental specifications and especially in case of very cold or humid weather, take steps to ensure that the internal temperature is at least −20 °C.

## 3.3　METALIC KIOSK GROUNDING CONSIDERATION

All parts of the kiosk should be connected to the ground
using ground cables or ground braid. The devices have to be
grounded according IEC 60950.



Connect to ground
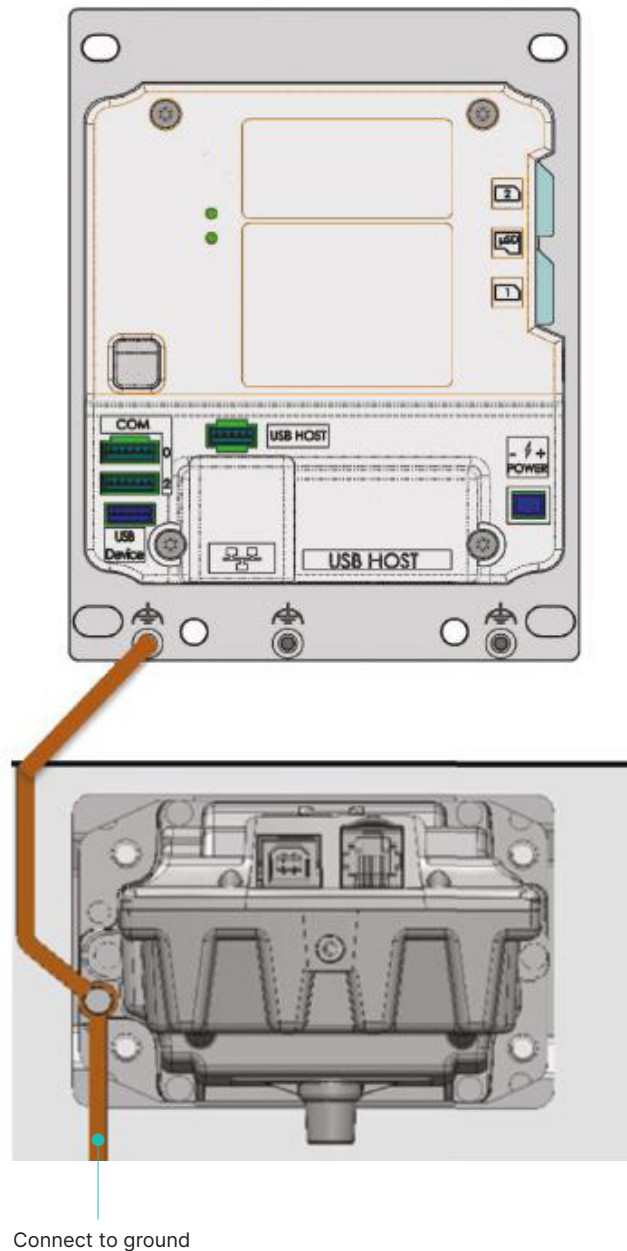
## 3.4 PLASTIC KIOSK GROUNDING CONSIDERATION

All parts of the kiosk should be connected to the ground using ground cables or ground braid. The devices have to be grounded according IEC 60950.



Connect to ground
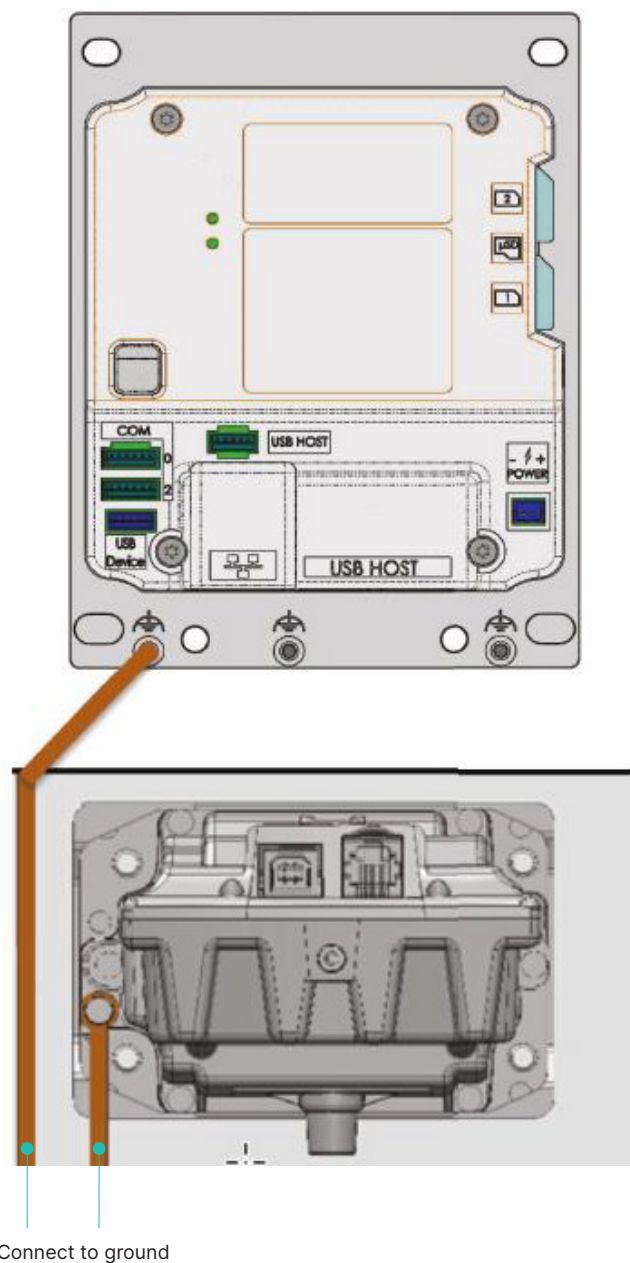
# 4  Assembly procedure for the terminal
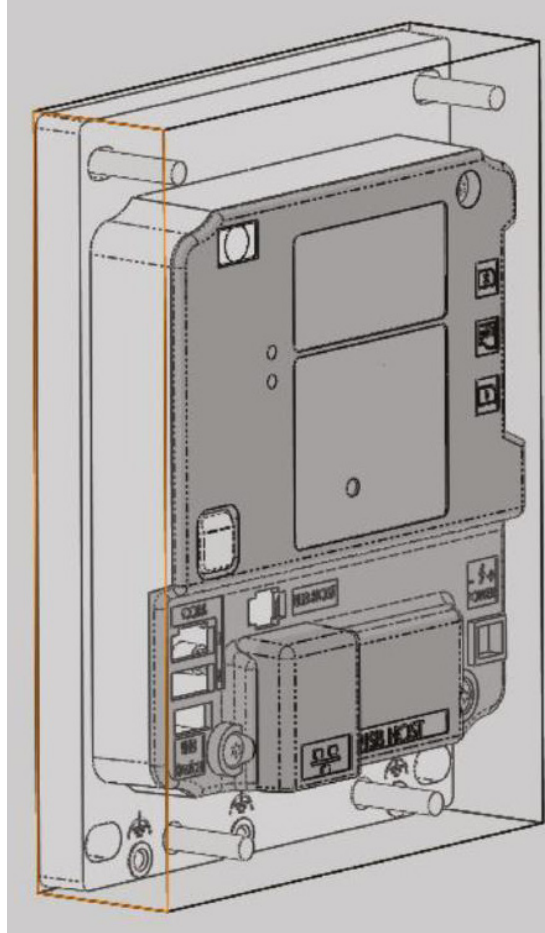
## 4.1    iUP250LE

### 4.1.1   KIOSK MINIMUM VOLUME FOR THE iUP250LE

The iUP250LE requires minimum volume in the kiosk.

It includes cables and pinshield mounting.
3D design on demand.

The minimum volume is:
- 101 mm width × 134 mm height × 28 mm depth (w/o Ethernet connectivity)
- 101 mm width × 134 mm height × 35 mm depth (w/ Ethernet connectivity)



Picture showing the minimum volume for the iUP250LE

## 4.1.2  KIOSK PREPARATION FOR iUP250LE INSTALLATION

The iUP250LE uses EVA mounting standard without 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 iUP250LE footprint surface on the kiosk must be flat and cleared of any holes and burrs.

Special attention is required for the anti-removal switch areas.
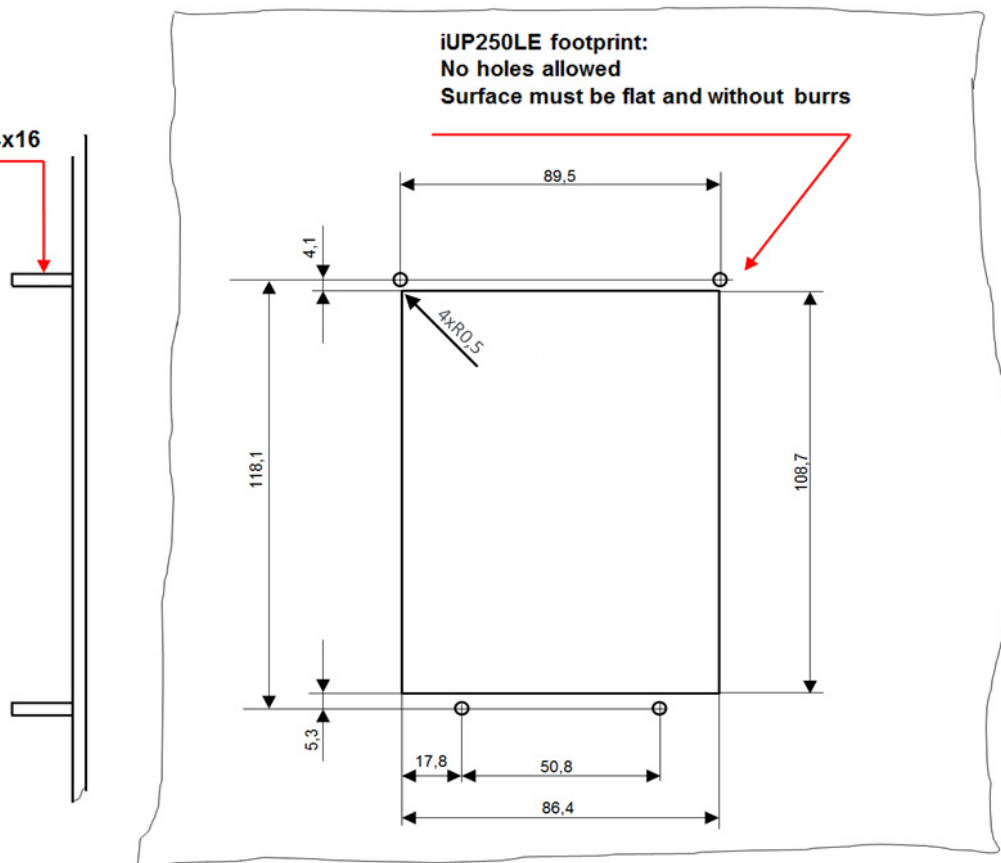
3D step files are also available upon request.

Fixing must be done by 4 × M4 × 16 mm welded studs.

Drawing of the cut-out for the iUP250LE.

Thickness of the panel: 2 mm



iUP250LE footprint:
No holes allowed
Surface must be flat and without burrs

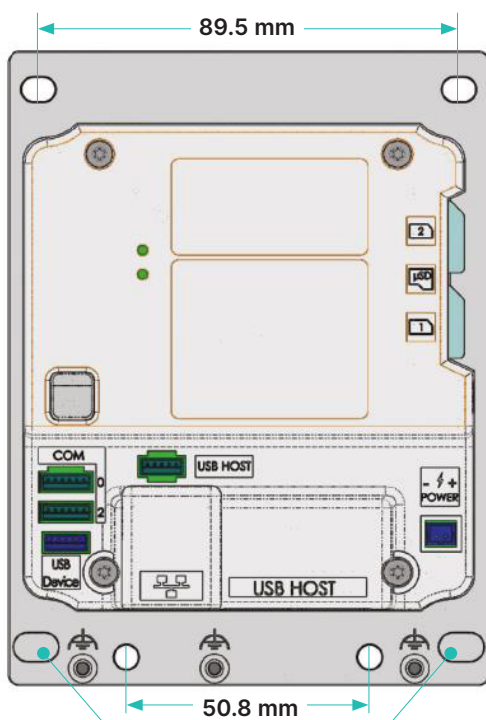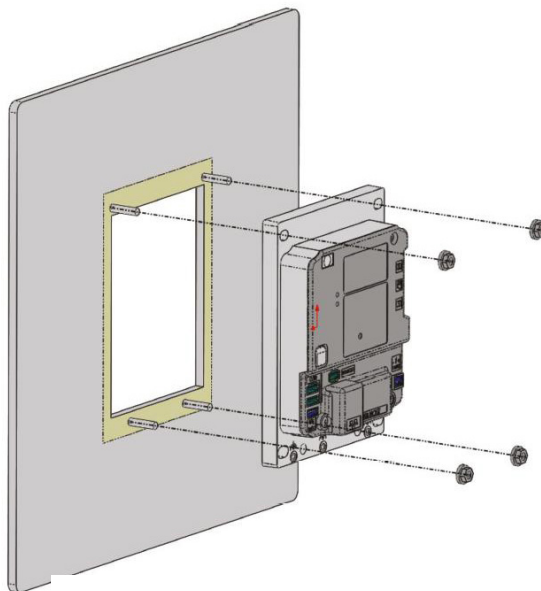(x4) weld stud M4x16

4xR0,5

89,5

4,1

118,1

108,7

5,3

17,8

50,8

86,4

## 4.1.3 INSTALLATION THE iUP250LE PIN PAD IN A NEW KIOSK

The iUP requires standards hexagonal nuts for integration into a kiosk.

Screw the 4 nuts with a 1.0 Nm torque.

It is recommended to use threadlocker fluid to prevent unscrewing with vibrations.



Picture showing a new installation of the iUP250 LE



**89.5 mm**

**50.8 mm**

The outside "holes" on the bottom are not available for mounting! Please use the inner holes at a distance of 50.8 mm.
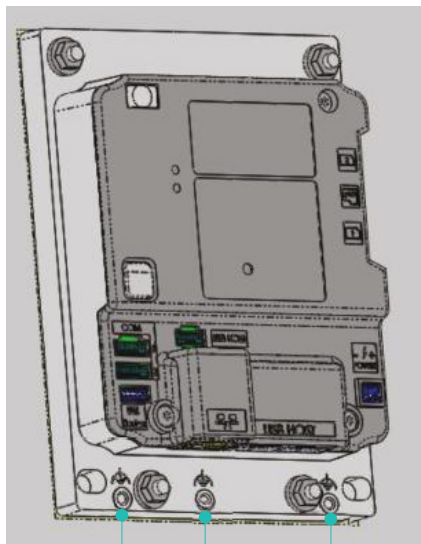
Anti-removal switch area

To be able to perform the commissioning procedure the PIN pad must be correctly mounted in the anti-removal switch area.
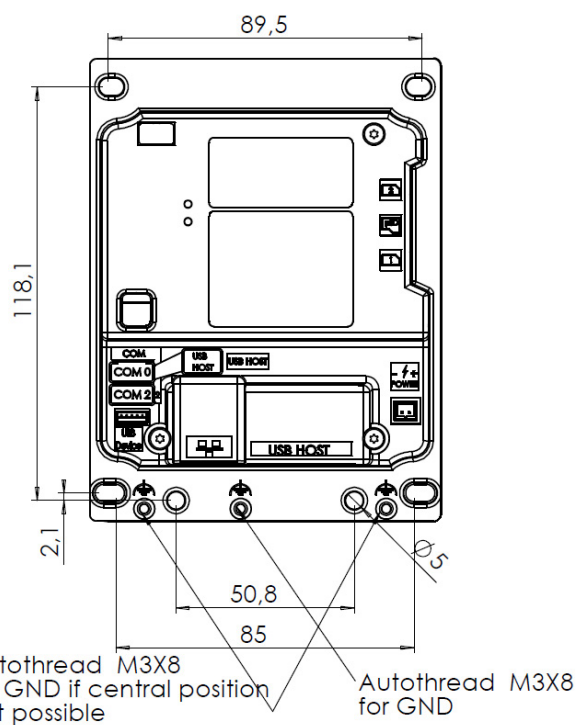
## 4.1.4 CONNECTING THE iUP250LE TO THE KIOSK GROUND

To insure good connexion of iUP250LE to the kiosk ground, it is recommended to install one copper braid connected on one specific area and connect this braid to the chassis. Torque value 1 Nm.



Ground studs to connect copper braid to ground



Autothread M3X8 for GND if central position not possible

Autothread M3X8 for GND

## 4.2　iUR250

### 4.2.1　KIOSK PREPARATION FOR iUR250 INSTALLATION

The iUR250 requires a cut-out in the kiosk. Dimensions in mm detailed in the diagram below.

**Caution**

The equivalent iUR250 hatched footprint surface on the kisok must be flat and clear of any holes and burrs.

Special attention is required for the area of the anti-removal switches.

Fixing must be done by 4 M4 to M6 × 12 mm welded studs.

Cut-out drawing for iUR250
EVA EPS compact cut-out (rear mounting).

3D design is available on demand.

## 4.2.2 LAYOUT SUGGESTED FOR iUP250LE AND iUR250 IN A KIOSK

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

Vertical PIN pad above the reader
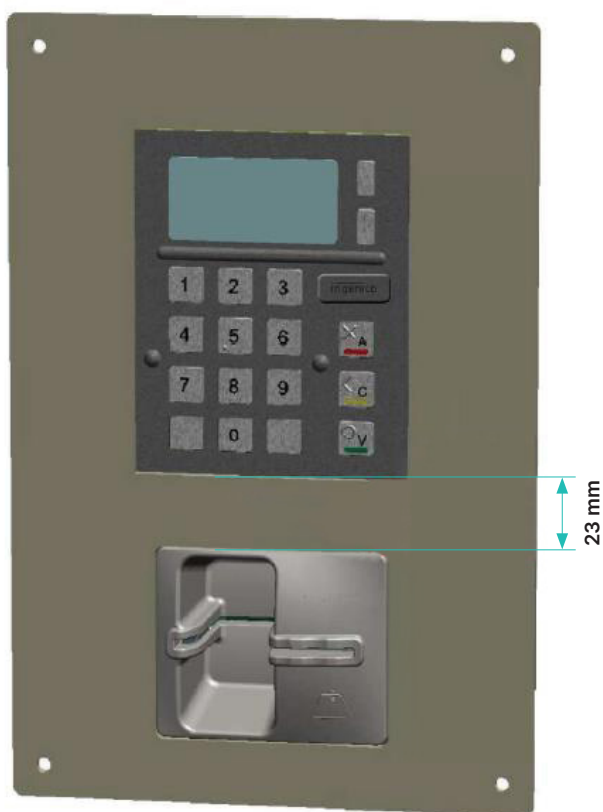


Minimum distance between reader and PIN pad is 23 mm.

**PIN shield must be managed separately!**

Leaned backward PIN pad above vertical reader



Minimum distance between reader and PIN pad is 25 mm to allow access to cables.

## 4.3   iUC150B

### 4.3.1  KIOSK PREPARATION FOR iUC150B INSTALLATION

The reader iUC150B does not require any volume inside the kiosk cabinet.

The label with the PCI hardware version number must be visibile once the device is installed.

The reader can be mounted directly on the kiosk panel. It requires a cut-out in the kiosk to the dimensions detailed in the diagram below. All dimensions are in millimeters.
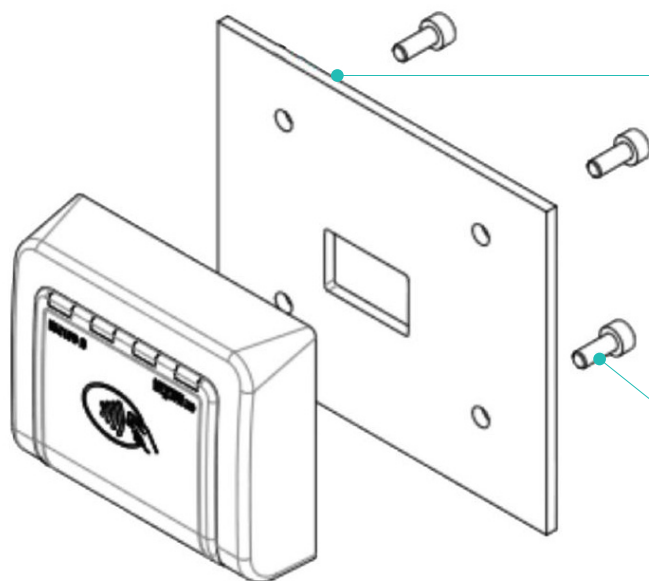
The surface must be flat and without any burrs and without any sharp edges.

To fix the iUC150B four screws M4 are required.

The length of the screw is depending on the panel thickness or front face.

Installation of iUC150B: Footprint and cut-out of front side.
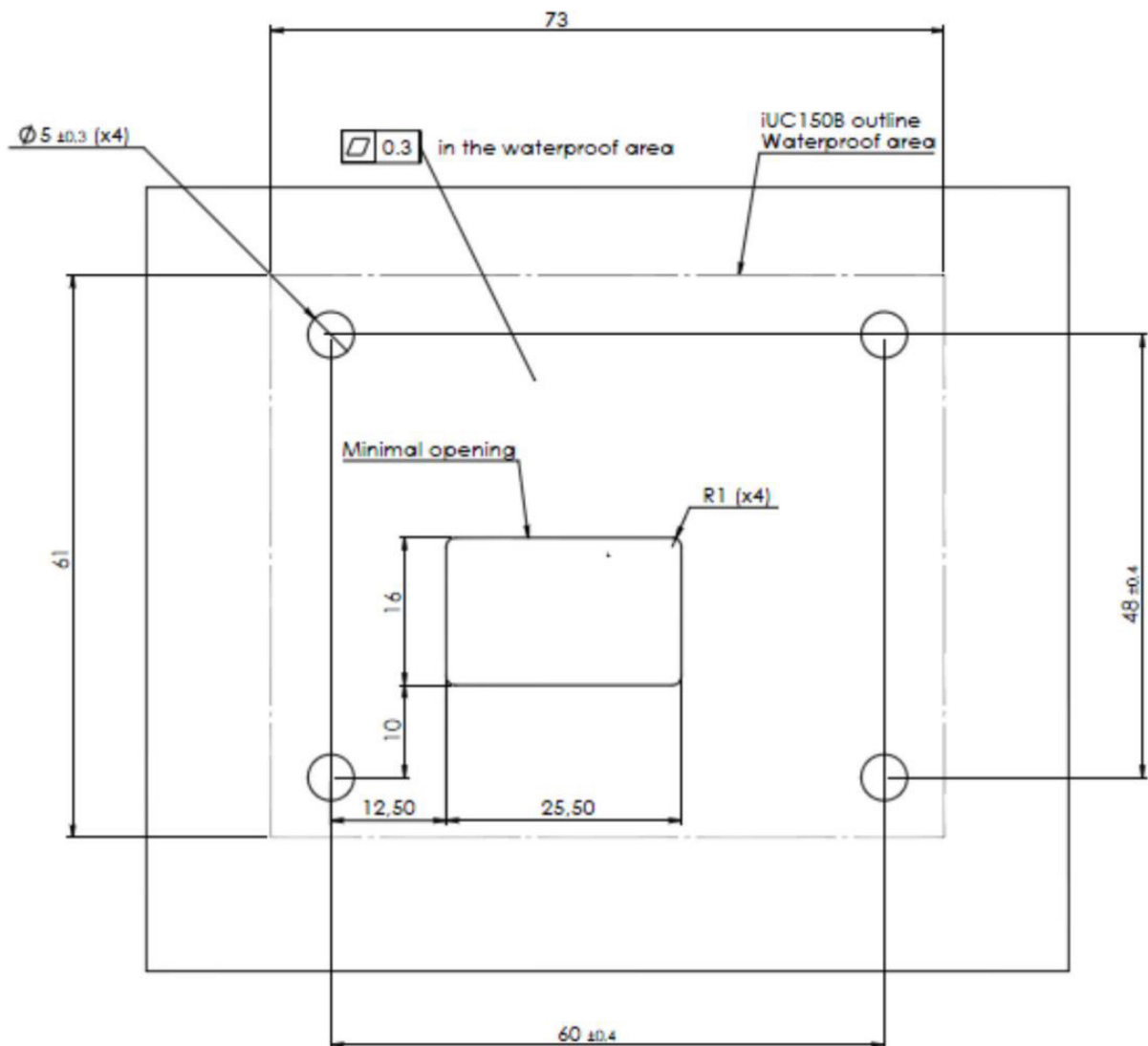
Equipment front face

The length of the screws is 5 mm
(+0/−1 mm) + thickness of panel.
The thread depth of the reader is 5.9 mm.
The torque is 0.6 to 0.75 Nm.

The dimensions of the reader iUC150B
allow also mounting into the EVA EPS compact
cut-out (rear mounting).

## 4.3.2  ADDITIONAL INFORMATION FOR NON-VOLUNTARY CONTACTLESS READING

The sensitive area (in blue) must be kept free in order to
avoid non voluntary contactless reading.s.



8 cm

IUC150 B            ingenico

8 cm

8 cm
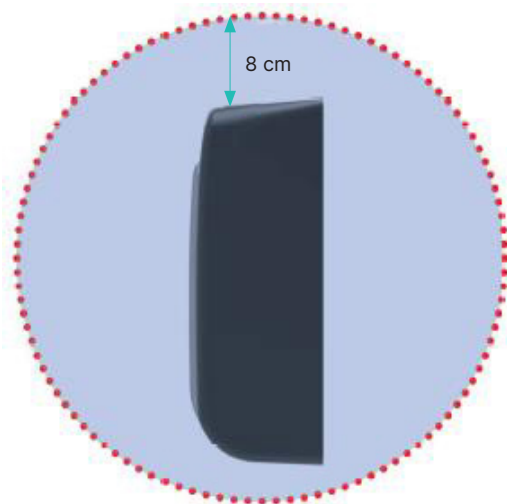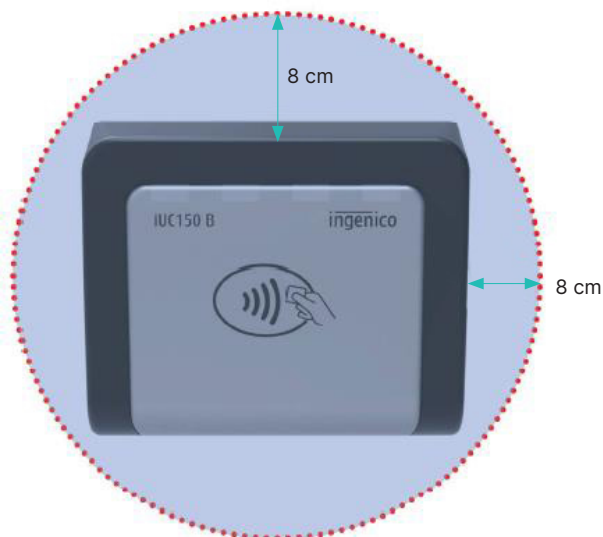
Your local point of contact can be found at: worldline.com/merchant-services/contacts