WORLDLINE

Self/2000
Self/4000
Self/5000

Integration Guide

Digital Payments
for a Trusted World

Table of content

1 Introduction

1.1 SELF/2000, SELF/4000 AND SELF/5000 PAYMENT SOLUTION PRESENTATION

The Self series is our new range of unattended devices to offer kiosk payment throughout different segments (petrol, transport, vending, parking, etc.). Not every Self terminal supports all segments/use cases.

- Self/2000 is a contactless only terminal.
- Self/4000 offers a contactless, chip- and magnetic stripe card reader and a conventional physical keypad.
- Self/5000 is a payment terminal with touch display (no physical keypad) that supports all kinds of card readers like contactless, chip and magnetic stripe.

Self/2000, Self/4000 and Self/5000 are single component (all-in-one) terminals and are designed according to the EVA EPS standard. The terminals can be easily mounted by the front and/or the rear. Usage can be indoor or outdoor, resisting to harsh weather conditions.

The Self series is the latest range of unattended payment terminals leveraging of experience from previous product ranges like the iSelf series, to renew the experience of unattended payment.

Remark: not all hardware components and interfaces described in the document (like USB interfaces, serial ports, SAM slots and microSD slots) are supported by the ep2 payment solutions.

1.2 DIAGRAMS OF SELF CONNECTIVITY AND COMMUNICATIONS

Self/5000

Power
USB
Slave

9–16 V Max ⎓ 2A

Display

Touch

Contactless cards

Camera

MMC slot

SAM slot

Chip & Magnetic cards

Serial port COM0

Serial port COM2

USB-A

USB-A

Audio

Self/4000

Power
USB
Slave

9–16 V Max ⎓ 2A

Display

Keyboard

Contactless cards

Camera

MMC slot

SAM slot

Chip & Magnetic cards

Serial port COM0

Serial port COM2

USB-A

USB-A

RJ45

Audio
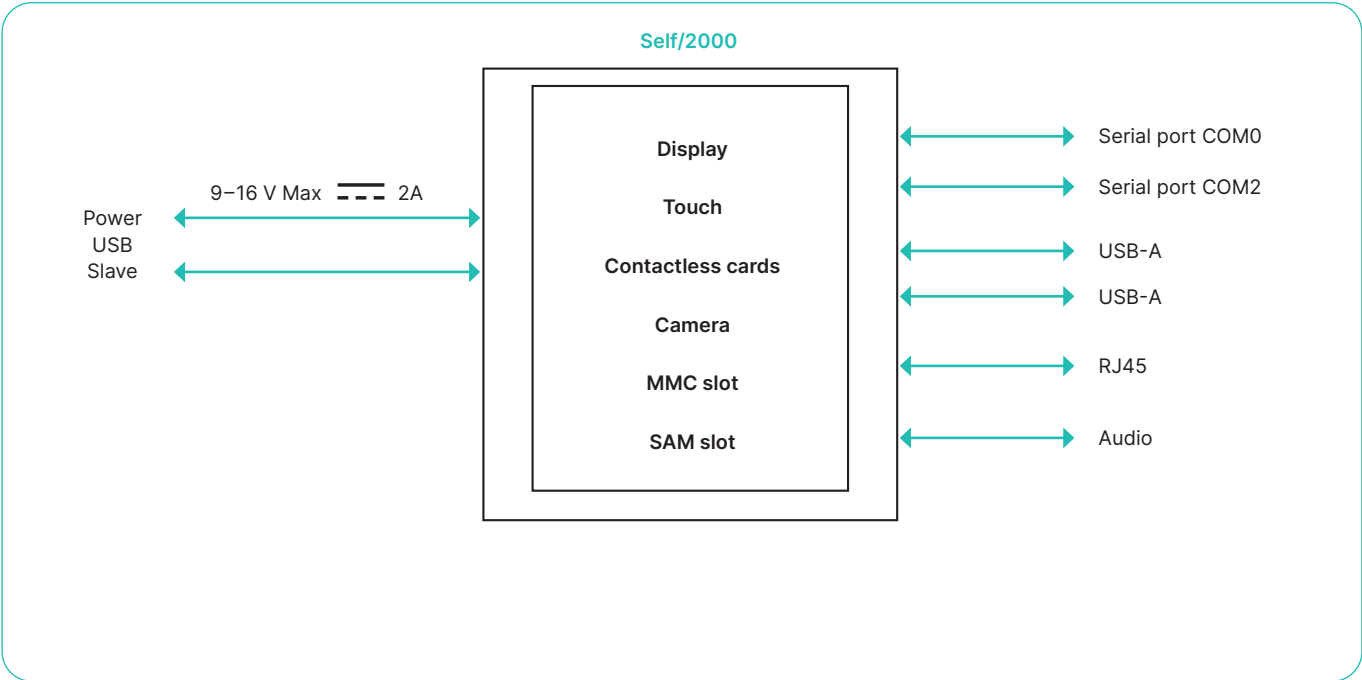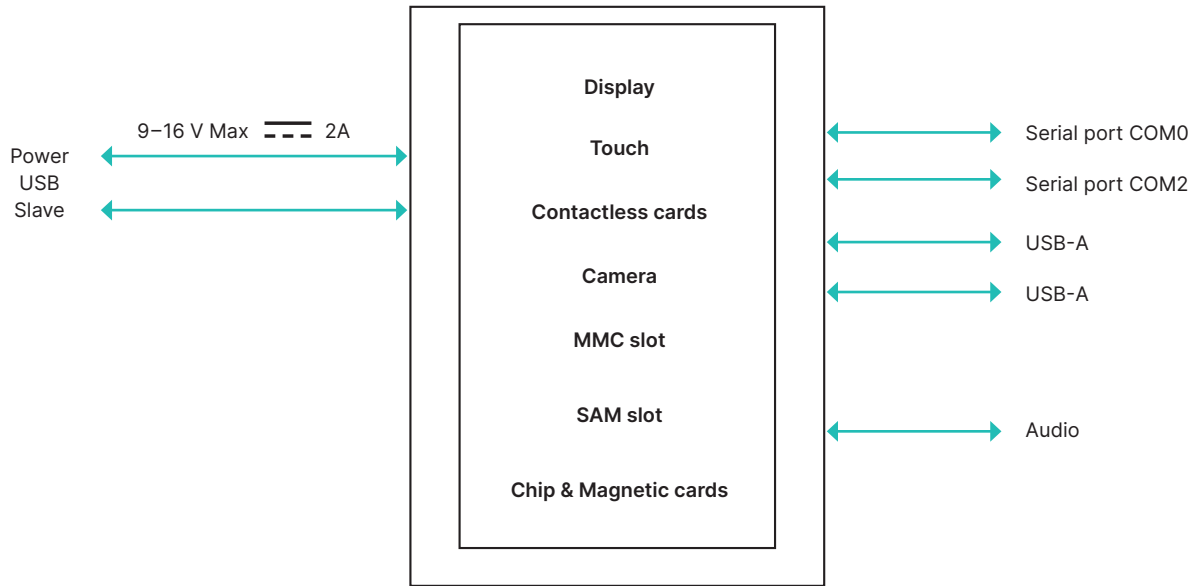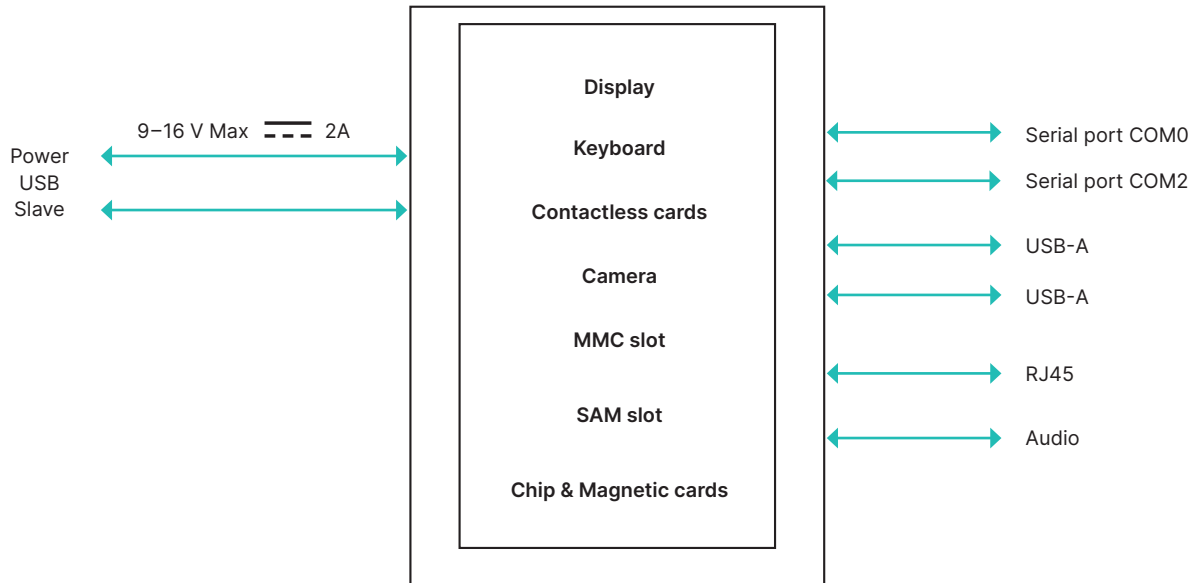
2 Description of modules

2.1   SELF/2000 PRODUCT VIEWS

2.2   SELF/4000 PRODUCT VIEWS

2.3   SELF/5000 PRODUCT VIEWS
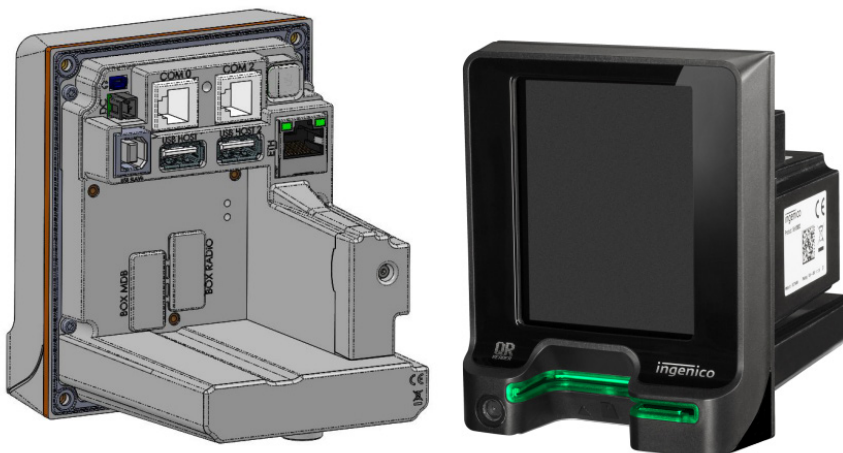
2.4 TECHNICAL CHARACTERISTICS

Weight	Self/2000: 340 g, Self/5000: 443 g, Self/4000: 392 g
Dimensions	107 × 85 × 110 mm (height × width × depth)
Power supply	9 V–16 V 2 A
Platform	Tetra
Memory	512 MB SDRAM and 512 MB Flash
Functionality Self/2000	Contactless cards reader 3.26" graphic display (240 × 320)+ Touch Camera – (OPTION w/o Camera on Self/2000) Buzzer Audio connector output 1× Maintenance Button 1× µSD 2× SAM Wake-up mechanism on RS232 connectors
Functionality Self/5000	Contactless cards reader 3.26" graphic display (240 × 320)+ Touch Camera – Buzzer – Audio connector output 1× Maintenance Button 1× µSD 2× SAM Wake-up mechanism on RS232 connectors Hybrid card reader (magnetic & chip)
Functionality Self/4000	Contactless cards reader 2.27" backlighted, landscape mode (640*240) 16 keys, backlighted keys Camera – Buzzer – Audio connector output 1× Maintenance Button 1× µSD 2× SAM Wake-up mechanism on RS232 connectors Hybrid card reader (magnetic & chip)
Link	2× USB host (USB-A) 1× USB device(USB-B) 2× RS232 (RJ11) 1× Ethernet (RJ45)

Operating conditions

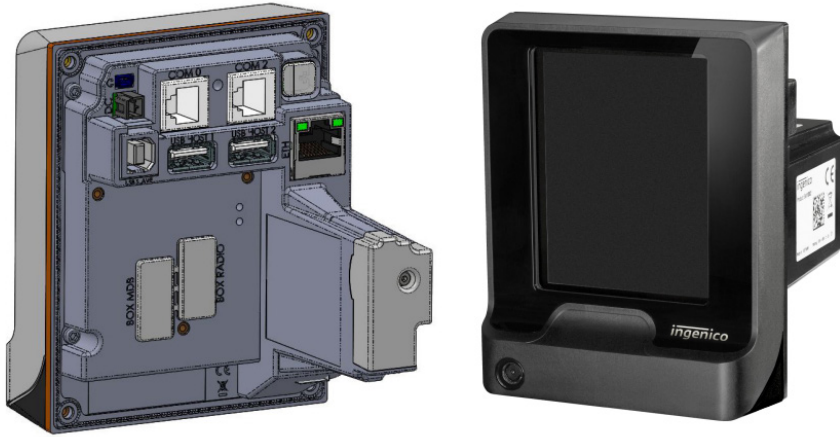|	
Operational temperature *	−20 °C, +65 °C
Functional temperature *	−20 °C, +70 °C
Max relative humidity	85% at 40 °C, non-condensing

* 65 °C is a maximum using temperature for user safety (IEC 60950). The product is operational up to 70 °C with no tampering issue.

Storage conditions

Storage temperature	−20 °C, +70 °C
Max relative humidity	85% at 55 °C, non-condensing

2.5   OUTPUT CONNECTORS DESCRIPTION
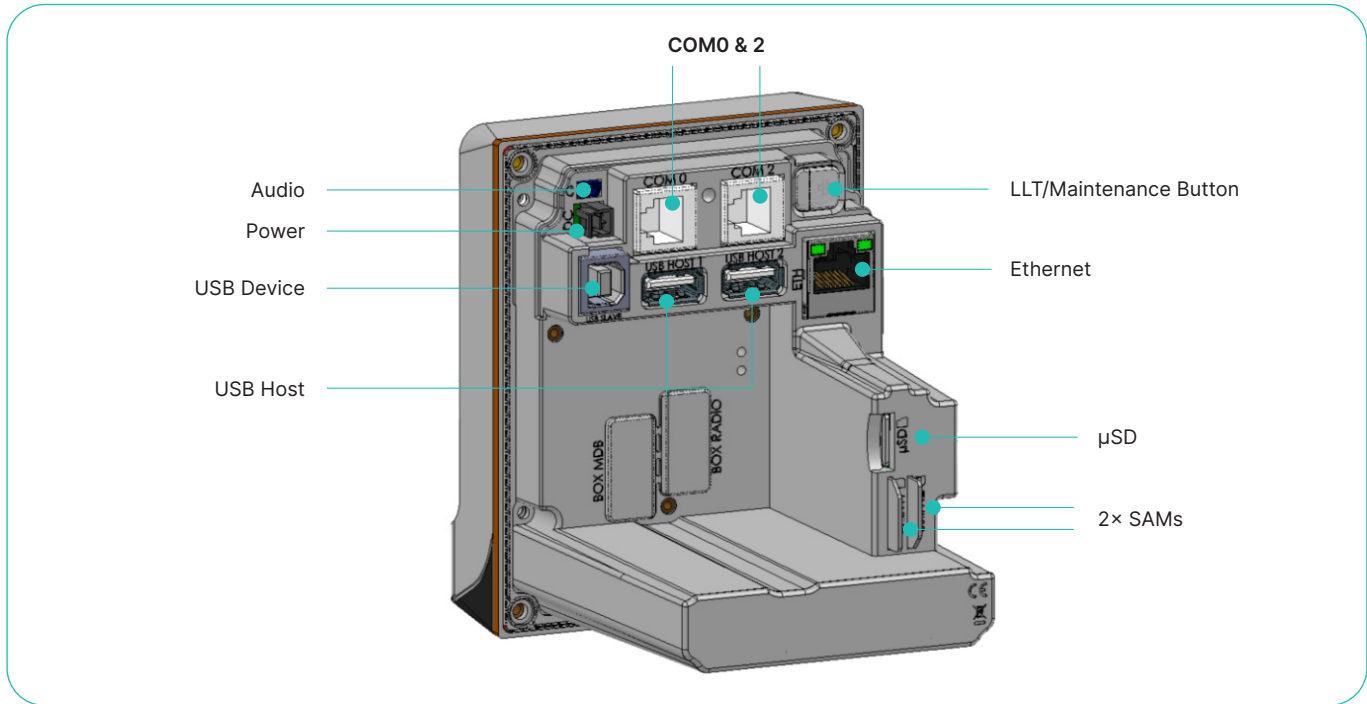
USB device
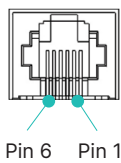- The device uses type B USB cable.
- Cable length should not exceed 5m.

COM0 and COM2 links
The device can be connected to serial port COM0 or COM2. The connector type is RJ11.

PIN No	Function
1	GND
2	Wake-up
3	RXD
4	TXD
5	CTS
6	RTS

Pin 6   Pin 1

SAM & micro SD installation

µSD Slot

SAM Slot 1

SAM Slot 2

Contactless LEDs & contactless logo
Contactless LEDs & contactless logo are displayed on the screen. Except for the Self/4000, where the contactless logo is located between the display and the keypad.

Touch (Self/2000 & Self/5000)
The devices have a full touch screen:
In terms of settings, the application can display buttons or a numeric keyboard.

Keyboard (Self/4000)
The device has a mechanical keyboard. 10× digit keys, 4× function keys (correction/valid, cancel, reserved) and 2 contextual keys (*, #, or, up/down).

Maintenance button and LED
The device 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 are 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 maintenance button until 3 red flashes show, then release. A blue flash appears.

If the device is in operating mode and fully started, a green LED signals that all is working well. Otherwise LED configurations in exploitation mode signal an issue.

Audio output
The audio output comes from a mono class D PWM amplifier which can be connected to a 4 or 8 ohms speaker with a signal level going up to 3.3 V.

Hybrid card reader
On the front face, the device has a backlit card entrance
for chip and magnetic card.

2.6   PROFESSIONAL INSTALLATION REQUIREMENT

The unit is designed to save power thanks to a "stand-by mode".

The terminals are only sold to qualified partners and integrators. They are in charge of professionally reselling, integrating, and installing these products into complete solutions for end customers. These end customer solutions can be:

• Petrol station
• Ticketing kiosk (Airline tickets, cinema, transport, etc.)
• Vending machine operator
• Parking kiosk (On/off street)
• EV charging
• Others

Partners, resellers, and integrators must have qualified electronics engineers to be able to install or integrate our products. Installation must always follow the recommendations as described in this document, in order to respect local regulations for electrical safety and radio emission levels.

2.7   MAINTENANCE BUTTON

To enter a mode, press the button until corresponding function appears, then release it.

Fix red	LLT mode
Blinking red	Maintenance Mode
Fix Green	Production Mode
Blinking purple	reserved for R&D
Fix purple	reserved for R&D

3 Requirements for product installation

> **Note:**
> You must wear 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

Your device meets the current applicable PCI PTS security requirements.

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 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 "Irruption!" and further use of the terminal will not be possible. If that's the case, you should contact the terminal helpdesk immediately.

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

The terminal must never be put in or left at a location where it could be stolen or replaced by another device.

You are strongly advised to perform regular checks on the chip card reader. No commissioning is required for the Self series thanks to PCI PTS5.x.

3.2   KIOSK MECHANICAL REQUIREMENTS

The kiosk panel can be metallic or plastic. The kiosk panel thickness must be between 2 mm and 5 mm. This is very important for contactless performance. The kiosk panel can be coated with paint but grounding of the Self/x000 modules must be insured. The surface of the kiosk panel to which the product is attached should be flat. With a metallic kiosk panel thickness more than 5mm or with metal parts near the antenna, the performance might not be correct.

3.3   ESD RECOMMENDATIONS

Metallic kiosk must be secured to the ground to protect the electronic devices they embed, such as Self/2000, Self/4000 and Self/5000. Regularly in contact with end customer during card introduction or CLESS payment, a rugged resistance to ESD must be guaranteed. The Self devices are tested up to ± 8 kV contact discharge and ± 16 kV through the air at low humidity with different payment cards following standard requirement procedures (note that usual standards defined discharge threshold limits at ± 4 kV contact discharge at ± 8 kV air through the air discharge).

If an EVA plate is used to fix the Self device on a metallic kiosk, please use one of the dedicated areas to connect the Self terminal to the ground. Indeed, a kiosk gasket inserted between metallic part and the Self device may cut the connectivity to the ground. If no EVA plate is used, there is no need to add an additional grounding cable, the screws used to fix the Self device on the kiosk guarantee a good connection to the ground.

3.4   CONTACTLESS BEST PRACTICE

Self/2000, Self/4000 and Self/5000 devices were tested vertically installed on a metallic kiosk (3 mm thickness), with and without EVA plate. EMVCo standard performances are guaranteed for a 'plan integration' but NOT if Self/2/4/5000 is inside the kiosk with metallic parts around.

The CLESS logo is displayed on the screen for Self/2000 and Self/5000 and on the top keyboard of Self/4000. CLESS logo must not be hidden during a transaction.

Recommended integration with metal kiosk
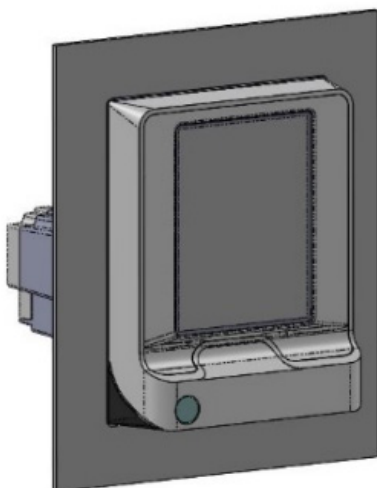
Not recommended integration with metal kiosk
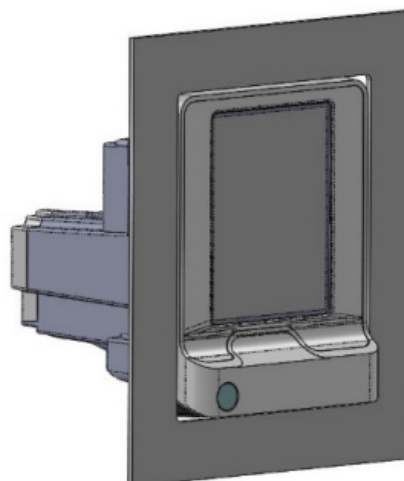
3.5 GENERAL INSTALLATION RECOMMENDATIONS

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 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.

Indoor use:
- Is possible without restriction.
- Vertical installation is recommended but installation with angle from vertical is possible due to lack of rain indoors (no more than 35°) for better ergonomic.
- Confidentiality when entering the PIN code must be preserved.

Outdoor use:
- Outdoor use is possible subject to some precautions. The integration must respect:
  – The terminal waterproofing, especially for Self/4000 & Self/5000 (hybrid card reader).
  – The screen readability under direct sunlight, especially for Self/2000 & Self/5000 (capacitive touch screen).
  – The confidentiality when entering the PIN code (Self/2000, Self/4000, Self/5000).

Mechanical integration into the kiosk:
- Vertical integration is recommended (better protection against rain and sunlight).
- Maximum angle from vertical for indoor environment: +35° for Self/2000 & Self/4000 & Self/5000.
- All Self/4000 and Self/5000 used in outdoor environment have to be fitted vertically: 0 degree angle.

Protection against the rain/water:
- Add a visor or install the terminal in a recess.
- Connect the water drainage pipes. Evacuate the water by gravity in the bottom of the kiosk without any direct contact with other devices.
- Vertical integration mandatory for Self/4000 and Self/5000 to prevent water from accumulating in the reader.

Protection against the sun light:
- Add a visor or install the terminal in a recess.
- The more vertically the product is installed, the easier it is to protect against the sun and rain.

Protection from prying eyes:
- We don't provide pin shield as accessory.
- Side protections against prying eyes is the responsibility of the kiosk integrator:
  – Integration into a recess or side protective vents recommended.
  – Keep a minimum of 2 cm on each side of the terminal – think about large smartphone's use.

4 Procedure for product installation

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

The centerline of operating controls or input and output components shall be located above 400 mm from the floor.

4.1   PRODUCT MOUNTED ON KIOSK PANEL

4.1.1   KIOSK PREPARATION

Products can be mounted directly onto the kiosk panel. It requires a cut out in the kiosk to the dimensions detailed in the diagram below (all dimensions are in millimeters).
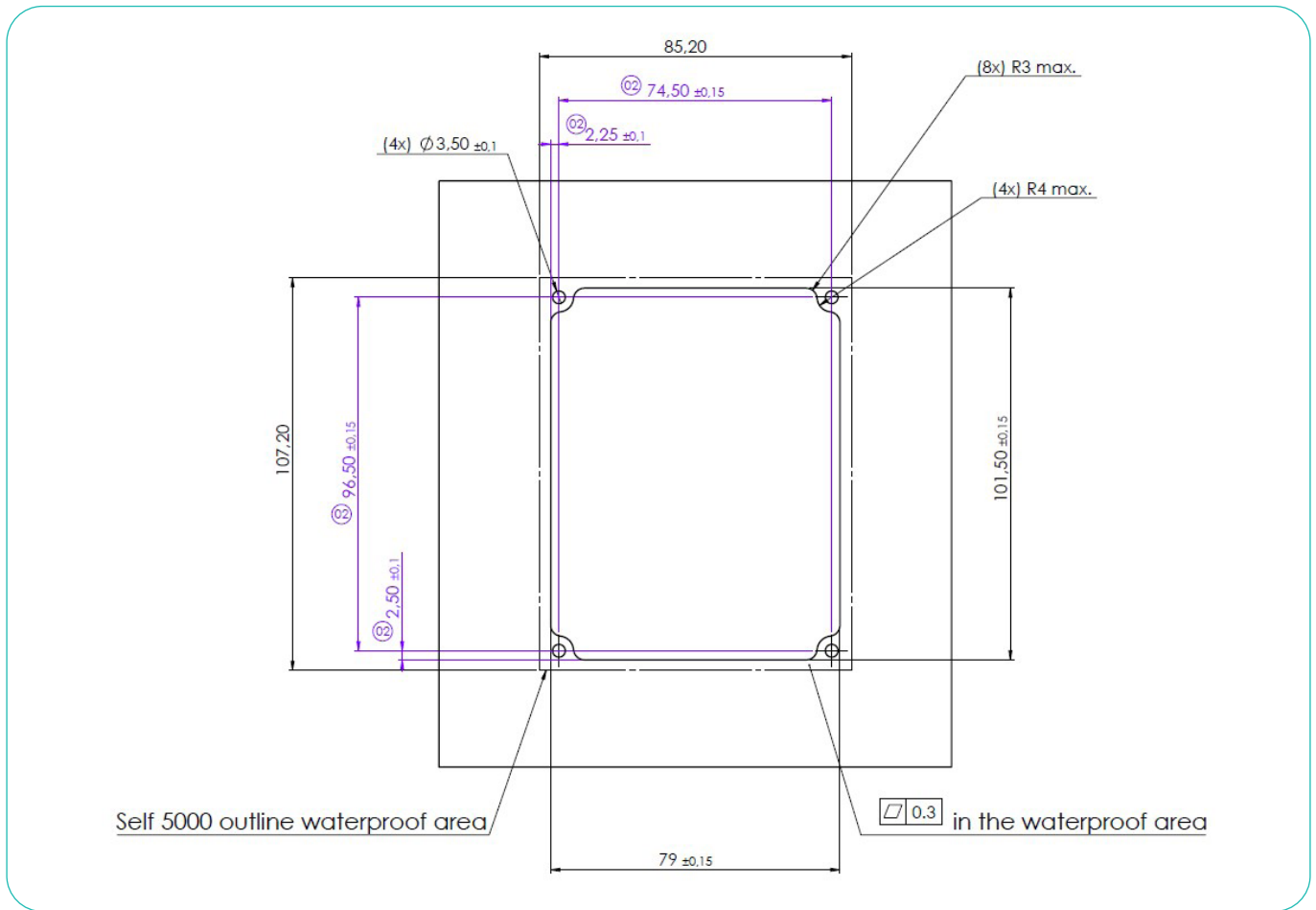
4.1.2   INSTALLING THE PRODUCT

Screw the 4 screws M3 with a 1 Nm + - 0,2 torque. It is recommended to use washers.

> **Caution**
> The device footprint surface on the kiosk must be flat and cleared of any holes and ridges to prevent dust and water from entering the kiosk (IP65 standard). Rubber at the rear of the product guarantees waterproofness between kiosk panel and product. 3D step files are also available upon request.
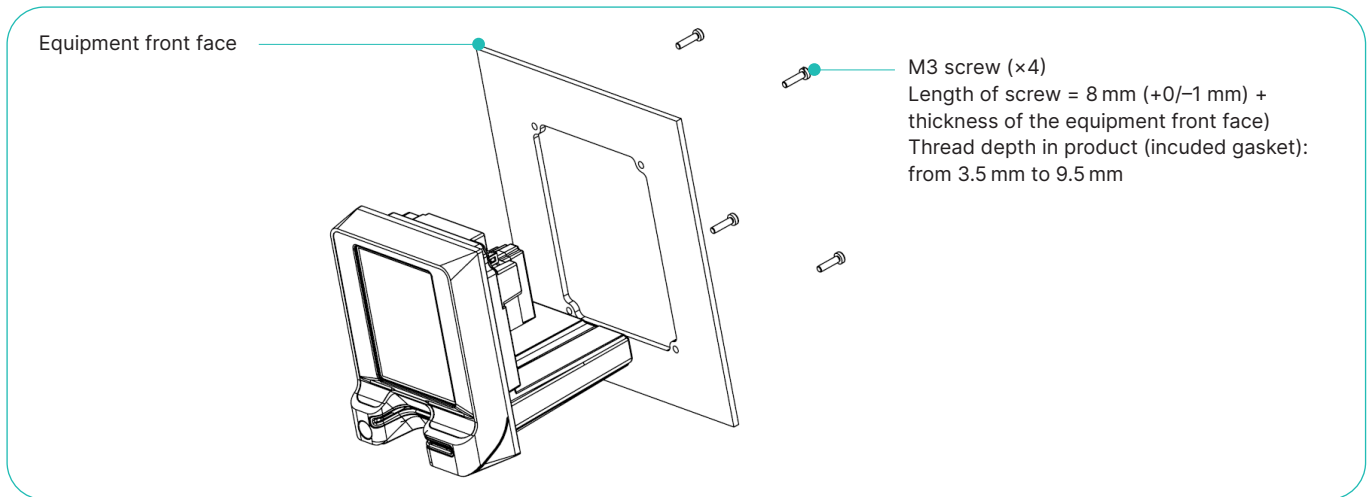
4.2   PRODUCT MOUNTED ON EVA PLATE

4.2.1 INSTALLING THE PRODUCT

It requires a cut-out in the kiosk to the dimensions of the EVA EPS standard door module.

Fixing must be done by 4 M4 × 12 welded studs. The device requires standard hexagon nuts for integration into a kiosk. Torque value used: 1 Nm +− 0.2.

Product can be mounted on a custom EVA plate. The EVA plate is provided in the standard package.

Screw the 4 nuts M3 with a 1 Nm +− 0.2 torque. It is recommended to use washers.

Equipment front face

M3 screw (×4)
Length of screw = 8 mm (+0/−1 mm) + thickness of the equipment front face)
Thread depth in product (incuded gasket): from 3.5 mm to 9.5 mm

Caution
It is a requirement of safety regulation that EVA plate must be permanently connected to GND.

Equipment front face

EVA EPS Standard mounting plate

M3 × 12 screw (×4)
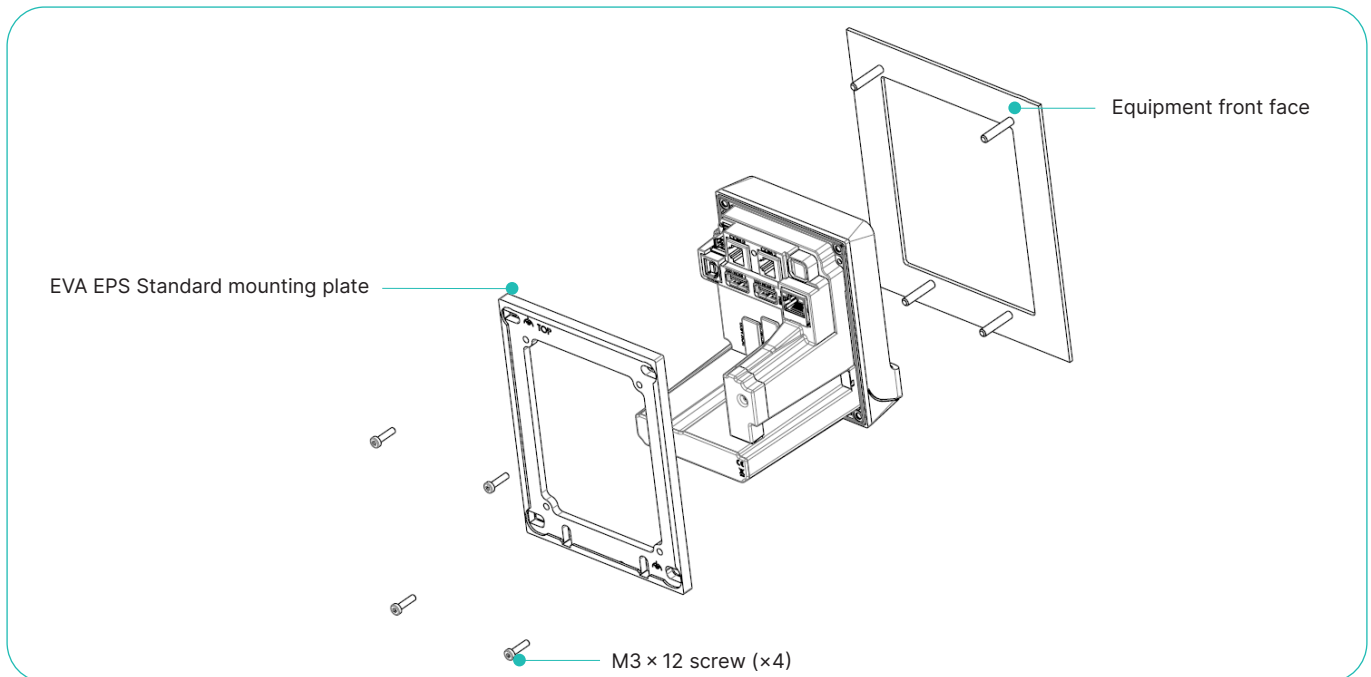
Caution
It is important that the device footprint surface on the kiosk must be flat and cleared of any holes and burrs to prevent from dust and water penetration in the kiosk (IP65 standard). Rubber at the rear of the product guarantees waterproofness between EVA plate and product. Waterproofness between EVA plate and kiosk panel should be guaranteed by the rubber on EVA plate. 3D step files are also available upon request.

4.2.2 MISCELLANEOUS

The EVA plate must be mounted inside the kiosk to guarantee IP rating requirements and to prevent Self/2000, Self/4000 and Self/5000 from being removed from the kiosk.

4.3   PRODUCT GASKET

To ensure IP ratings, it is necessary to have the gasket correctly assembled.
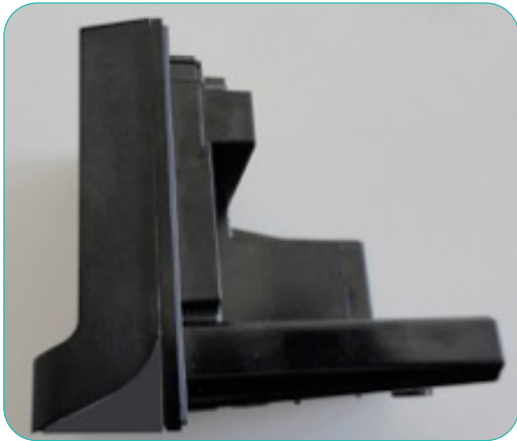
Caution
IP rating is related to front face only
Self/2000: IP65
Self/5000 & Self/4000: IP44

4.4   EVACUATION PIPE

This accessory is delivered for Self/5000 and Self/4000 to guide water inside the kiosk. We suggest to use a "Y" adapter fitting for both tubes.

Caution
IP rating is related to front face only
Self/2000: IP65
Self/5000 & Self/4000: IP44

5 Add-on Boxes

Terminals of the Self series can be upgraded by two types of add-on boxes:

The first one is dedicated to MDB features: MDB slave (Version 4.2).

The second one is dedicated to communication. It offers radio communication (4G/2G EU standard).

5.1   SELF/2000, SELF/4000 AND SELF/5000 – MDB ADD-ON BOX

5.1.1   DESCRIPTION

The Self MDB add-on box allows the Self/2000/4000/5000 product to be powered by MDB power supply 10–45 V via a 6-pins Molex connector.

5.1.2   CONNECTIVITY AND COMMUNICATIONS DIAGRAMS
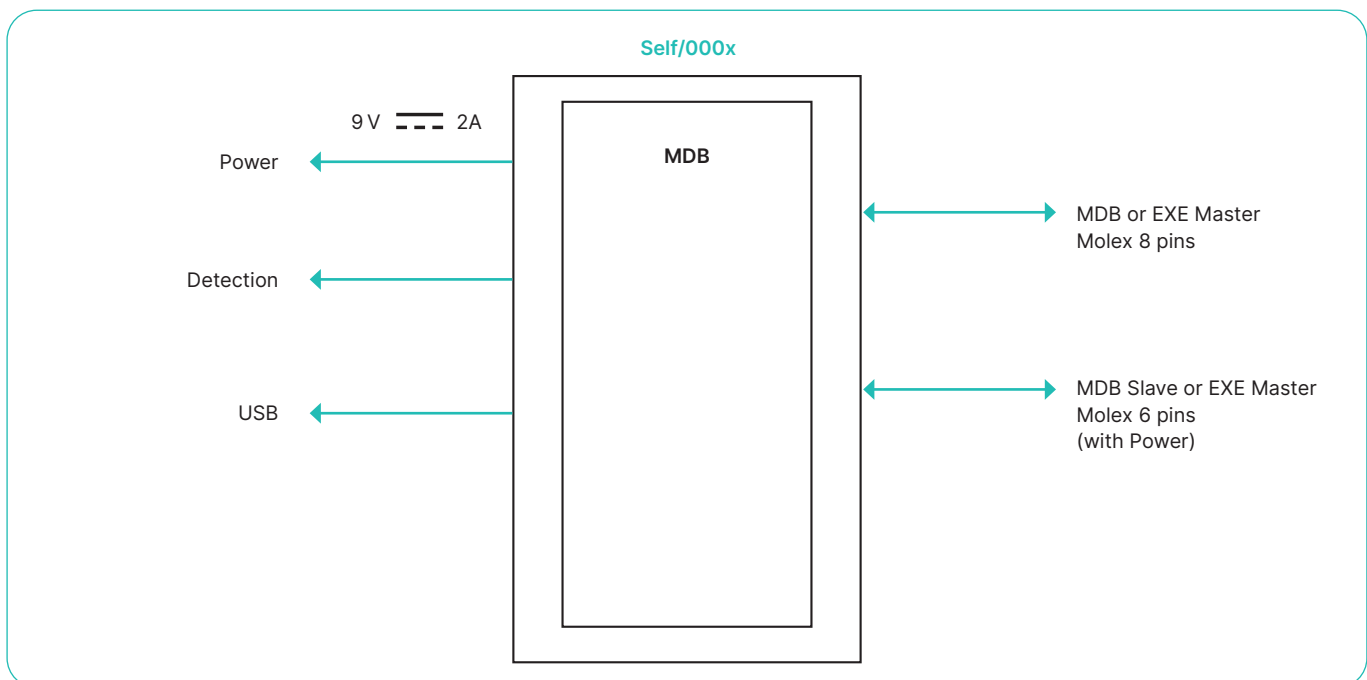
5.1.3   CONNECTOR PIN OUT

The connector type is MDB 6 pins (mini fit series 87827 [MOLEX]). The Self MDB add-on adapter can be connected via MDB slave and provides power from 10 to 45 V DC or 9 to 16 V directly at the unit.

5.2   INSTALLATION

5.2.1 BOX MOUNTING

- Switch off the power supply to the unit.
- Remove the relevant cap from the rear housing.
- Insert the add-on box.
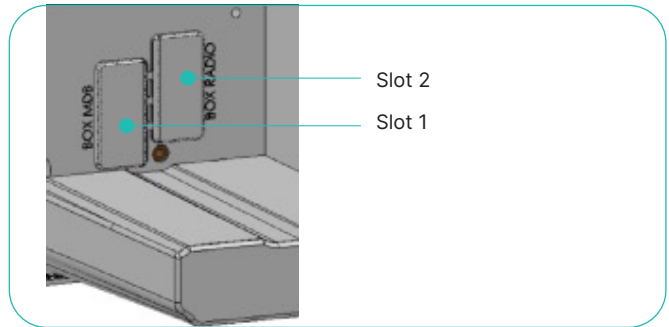   - Slot 1 for Self MDB add-on box.
    - Slot 2 for Self 4G/BT add-on box.
    - Screw the two screws using torque: 0.8 Nm

Slot 2
Slot 1

5.2.2 SIM INSERTION
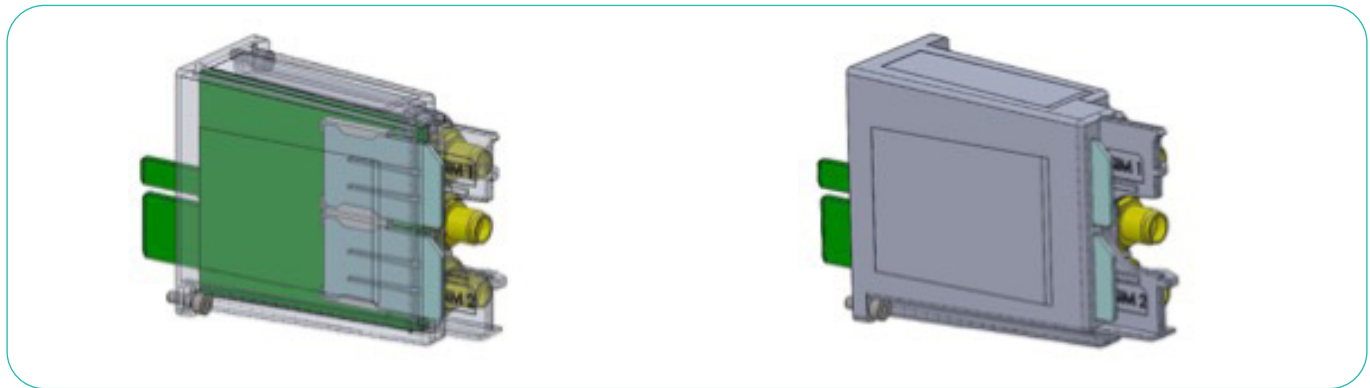
5.2.3 ANTENNA MOUNTING

Mount the antenna on the "main antenna" connector.

- Screw the antenna on the relevant connector.
- Replace the antenna tool.

Diversity antenna
Main antenna
Antenna tool
BT

Caution

For compliance with FCC, IC and regulations.
- Concerning Bluetooth antenna, the antenna gain, including cable loss, must not exceed the limit 0.56 dBi for 2.4 Ghz.
    - Concerning 4G cellular antennas the antenna gain, including cable loss, must not exceed the limit 2.15 dBi.

6 Cleaning instructions

The external front face of the contactless reader should carefully be cleaned with a damped cloth on a regular basis. The goal is to keep the display and the touchscreen 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.
- The glass has special surface treatment which must be carefully cleaned.
- 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 the use of pressurized liquids.
- Avoid exposing the terminal to the direct rays of the sun.

7 Temperature and humidity

Operation and storage conditions:
- Operation conditions:
  - Relative humidity: 85% non-condensing at 40 °C.
  - Operational temperature range: –20 °C to +65 °C.
  - Functional temperature range: –20 °C to +70 °C.

- Storage conditions:
  - 85% non-condensing at 55 °C.
  - External temperature range: –20 °C to +70 °C.

*65 °C is a maximum operating temperature for user safety (IEC 60950). The product is operating up to 70 °C without tampering issue.

7.1   ENVIRONMENTAL SPECIFICATION CONTINUED

Average power device waiting for host solicitation:
- Storage conditions:
  - Front face shock resistance: IK09.
  - Vibrations resistance:
    - NF EN 60068-2-6 and the below conditions (10 tests sequences per axis):
      From 5 Hz to 9 Hz with 3.3 mm amplitude.
      From 9 Hz to 200 Hz with 10 m/s² acceleration.
      From 200 Hz to 500 Hz with 15 m/s² acceleration.
      Endurance 30 mn on each resonance frequency.

  - Bumps resistance:
    - NF EN 60068-2-29. E
    - Each direction, 500 drops ½ sinus 25 g–6 ms
- Natural events:
  - Water and dust resistant IP65 (Self/2000 front face only); IP44 (front face only) (Self/5000 and Self/4000).
- Degradation specification:
  - Vandal resistant.
  - Certified anti-tamper and attack resistant.

7.2   CE MARKING

The CE marking certifies that the product complies with the following requirements:

Conforms with the relevant union harmonisation legislation: RE directive 2014/53/EU and Ro HS directive 2011/65/EU with amendment (EU) 2015/863

7.3 FCC STATEMENTS

FCC standard compliance marking certifies that the product stipulated below:
Self/2000, Self/4000, Self/5000.

Conforms to the following harmonized standards: part 15 of the FCC rules.

This class (B) digital apparatus complies with industry Canada license-exempt RSS standard(s) 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 radiation exposure limits set forth for general population. This device must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:
1. this device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

7.4 ENVIRONMENT (WEEE; BATTERIES AND PACKAGING)

This product is labelled in accordance with European Directives 2012/19/EU 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.

We ensure 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.

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

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.

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