Smart Cash Collection System

User Guide

100-023 Rev. A

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CHAPTER 1 | REVISION HISTORY

Revision	Date	Description
A	March 2016	Document Release

CHAPTER 2 | CERTIFICATIONS AND STATEMENTS

2.1 FCC Rules

2.1.1 Compliance Statement (Part 15.19)

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.

2.1.2 Warning (Part 15.21)

Changes or modifications not expressly approved by IPS Group, Inc. could void the user's authority to operate the equipment.

2.1.3 Compliance Statement (Part 15.105(b))

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 instructions, 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 the 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 a circuit different from that to which the receiver is connected.

This device emits radio frequency energy when transmitting to avoid injury keep at least 20cm from all person.

2.1.4 Canadian Statement

2.1.4.1 Industry Canada RSS-Gen statement:

“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.” (ce with Industry Canada ICES-003 standard.)

2.1.4.2 “CAN ICES-3 (B)/NMB-3(B)”

(Note only: the above statement is to indicate compliance with ICES-003)

CHAPTER 3 | OVERVIEW

IPS has developed a system to track coin collections performed at IPS's single-space meter to help cities and universities manage their parking operations more efficiently. The IPS Smart Cash Collection System is aimed at assisting parking managers keep accurate count of cash transactions and help personnel gain accountability.

The IPS cashbox is wirelessly paired with the IPS parking meter, which counts the coins being deposited into the cashbox. Wireless communication between the two devices allows coin collection data to be transmitted to the online IPS Data Management System (DMS). This includes the opening/closing of the cash vault door and removal/insertion of a cashbox. The Smart Cash Collection utilizes BLE technology to record all collection activity. BLE collection data is then transmitted to the DMS for easy auditing.

3.1 Elements

The coin collection system contains the following elements:

3.1.1 IPS Parking Meter Terminal

This unit contains the receiver radio that communicates with the IPS smart cashbox. The meter differentiates and records coins that are inserted into the meter and deposited into the cashbox. The meter will also record and timestamp the opening of the vault door and the removal or insertion of the cashbox.

3.1.2 Upper Meter Housing

Existing single-space housing or IPS supplied housing.

3.1.3 Lower Meter Housing with Coin Vault

Existing single-space coin vault, with or without optional electronic lock.

3.1.4 IPS Smart Cashbox

Communicates wirelessly with the IPS parking meter terminal. The electronics are housed in the top of the can and the larger cashbox (shown below) can hold approximately 275 US quarters. The Smart Cashbox has the following features:

- Wireless connection to the IPS parking meter allows this technology to be used in new and existing meter housings
- Easy to retrofit in the field
- Motion detector senses insertion or removal of the container
- Magnetic field sensor detects opening and closing of the vault door
- Magnetic switch allows detection of the vault door opening and closing
- Coin detector identifies coin jams in the chute
- Active and passive RFID identification allows the identification of the cashbox by both the meter and the coin collection canister
- Extended battery life up to 5 years
- Integrated lock system

3.1.5 IPS Smart Collection Canister System

IPS can supply the entire coin collection canister or offer to retrofit the existing collection canisters.

The IPS collection/canister cart records the serial number of the cashbox being emptied into it. The event is time stamped and recorded and transmitted to the IPS Data Management System. This gives parking operations managers the ability to trace which meter's cashbox was dumped into which coin canister.

Features of the Collection Cart/Canister System include:

- Card reader allows collections staff to clock in and out
- Powered by rechargeable battery system
- Cellular communications transmits collection data to IPS Management System
- Electronic tag reader reads cashbox ID when the coins are dumped into the collection cart
- Options to record/select current collection route

3.2 Collection Process

1. Cashbox collects coins inside the meter.
2. Collector approaches the meter and unlocks the vault with key.
3. When key is inserted, door sensor on cashbox sends Vault Open event to parking meter, where it is recorded with a timestamp.
4. Meter utilizes BLE technology to record information along with event data.
5. Collector removes cashbox from vault. Event information is transmitted to the meter terminal where it is recorded and time-stamped.
6. Cashbox is docked into collection canister and rotated to open the door to allow the coins to be discharged into the canister. At this time the collection canister records and timestamps the ID of the cashbox in its internal memory.
7. Cashbox is removed from the collection canister and replaced into vault. The meter records and timestamps this event.
8. Vault door is closed, meter records and timestamps this event.
9. If the correct cashbox is not inserted, the meter will record “invalid cashbox” and send alarm if configured to do so.
10. This procedure repeats until the collection canister is full or the route has ended, where the collector swipes the card to end this canister’s collection sequence. The data recorded in the coin collection canister is transmitted to the database.