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User Manual

LeanOrder detectionShelf

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1. LeanOrder detectionShelf

The LeanOrder detectionShelf is used in different types of racks to identify empty bins and trigger a replenishment message for the articles linked to these bins.

1.1 Identify the LeanOrder detectionShelf

A LeanOrder detectionShelf (see Figure 1) can be identified by a unique barcode label at the front of the LeanOrder detectionShelf (see Figure 2).



Figure 1: LeanOrder detectionShelf



Figure 2: LeanOrder detectionShelf and the barcode label

1.2 Set-up for the LeanOrder detectionShelf

The LeanOrder detectionShelf has a battery compartment for nine AA lithium batteries. The batteries can be inserted after the battery cover has been removed using a screwdriver for the two screws (Figure 3).



Figure 3: LeanOrder detectionShelf and the barcode label

The AA lithium batteries (3.6V / 2.4Ah) have to be inserted correctly, see Figure 3. The polarization of the battery compartment is for each battery the same.

1.3 Use cases for different users

The LeanOrder detectionShelf is used to detect bins with passive UHF RFID labels (see Figure 4; two black bins with a UHF RFID label). There are two users for the LeanOrder detectionShelf:

- The **manufacturing operator**, working in the manufacturing facility where the detectionShelf is integrated in racks, has to place empty bins on top of the LeanOrder detectionShelf in order to enable the detection and the transmission of a replenishment information to the central server. Empty bins are read using the “automatic scanning mode” (see explanation in chapter 1.4);
- A **replenishment operator** clears the LeanOrder detectionShelf by taking all accumulated empty bins off the detectionShelf. In order to ensure that all empty bins are read by the detectionShelf using RFID, the replenishment operator can perform the “manual scanning mode” (see explanation in chapter 1.4).



Figure 4: LeanOrder detectionShelf with two RFID-labeled empty bins

1.4 Scanning modes of the LeanOrder detectionShelf

The detection Shelf has two scanning modes to detect empty bins:

- Automatic scanning mode
- Manual scanning mode

The **automatic scanning mode** is the default-scanning mode. In this mode, the LeanOrder detectionShelf scans every predefined time period (e.g. all four hours) sequentially over all antennas integrated in the detectionShelf. After an automatic scan round, the detection Shelf sends automatically the RFID ePC codes of all detected empty bins to a central LeanOrder Controller in the manufacturing facility.

The **manual scanning mode** is activated using a magnet that triggers a hall sensor within the LeanOrder detectionShelf. The magnet has to be placed on top of the detection Shelf directly above the LED (see Figure 5). During the manual scan, the LED next to the barcode will flash. After an automatic scan round, the detection Shelf sends automatically the RFID ePC codes of all detected empty bins to a central LeanOrder Controller in the manufacturing facility.



Figure 5: A magnet on the LeanOrder detectionShelf to trigger the manual scanning mode

2. Compliance information

Model:	detectionShelf	
Region/Country	Organization	Marking
USA:	FCC	2ANAA-LODSHELF01
Canada:	Industry Canada	23043-LODSHELF01

2.1 USA Notification

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.

Class B: (Section 15.105)

FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT

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.
- Consult the dealer or an experienced radio/ TV technician for help.

CAUTION:

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

RF exposure warning

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter 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. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

2.2 Canada Certification

This device complies with Industry Canada license-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

Radio Frequency (RF) Exposure Information

The radiated output power of the Wireless Device is below the Industry Canada (IC) radio frequency exposure limits. The Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized.

This device has also been evaluated and shown compliant with the IC RF Exposure limits under mobile exposure conditions. (antennas are greater than 20cm from a person's body).

Informations concernant l'exposition aux fréquences radio (RF)

La puissance de sortie émise par l'appareil de sans fil est inférieure à la limite d'exposition aux fréquences radio d'Industry Canada (IC). Utilisez l'appareil de sans fil de façon à minimiser les contacts humains lors du fonctionnement normal.

Ce périphérique a également été évalué et démontré conforme aux limites d'exposition aux RF d'IC dans des conditions d'exposition à des appareils mobiles (antennes sont supérieures à 20 cm à partir du corps d'une personne).