

---

# 1 DATECS

## **SumUp** air v2 **USER GUIDE**



SUMUP AIR v2 User Guide

© 2018 Datecs, Ltd.

## 1 DATECS

All rights reserved. No part of the contents of this document may be reproduced or transmitted in any form without the written permission of Datecs, Ltd.

The information contained in this document is subject to change without notice. Although Datecs has attempted to ensure the accuracy of the contents of this document, this document may include errors or omissions. The examples and sample programs are for illustration only and may not be suited for your purpose. You should verify the applicability of any example or sample program before placing the software into productive use. This document, including without limitation the examples and software programs, is supplied "As-Is."

Datecs, the Datecs logo, are registered trademarks of Datecs. Other brand names or trademarks associated with Datecs's products and services are trademarks of Datecs, Ltd. All other brand names and trademarks appearing in this manual are the property of their respective holders.

**Comments?** Please e-mail all comments in this document to your local Datecs Support Team.

Datecs, Ltd.  
4 Datecs Street  
1592 Sofia, Bulgaria

[www.datecs.bg](http://www.datecs.bg)

SUMUP AIR v2 User Guide

# Contents

- CONTENTS** .....3
- REVISIONS HISTORY** .....5
- REGULATORY** .....6
- PREFACE** .....7
  - AUDIENCE .....7
  - ORGANIZATION .....7
  - RELATED DOCUMENTATION .....8
- CONVENTIONS** .....8
  - TABLE 1 DOCUMENT CONVENTIONS .....8
- OVERVIEW** .....9
  - SUMUP AIR v2 PAYMENT TERMINAL .....9
- FEATURES AND BENEFITS** .....10
- DEVICE SPECIFICATIONS** .....11
- DEVICE OPERATION** .....12
- SETUP** .....13
  - SERVICE MODE .....13
  - INFO VERSION .....14
  - INFO HARDWARE .....14
  - INFO KEYS .....14
  - TEST DISPLAY .....14
  - TEST KEYBOARD .....14
  - TEST SCR .....15
  - KEYS DOWNLOAD .....15
  - CLEAR DEA KEYS .....15
  - EXIT .....15
  - APPLICATION DOWNLOAD MODE .....15
  - COMMUNICATION PARAMETERS .....16
  - APPLICATION SETTINGS .....16
- SMART CARD READER USE** .....17
  - TO CONDUCT A SMART CARD TRANSACTION .....17
- CONTACTLESS CARD READING** .....18
  - TO CONDUCT A CONTACTLESS CREDIT/DEBIT CARD TRANSACTION .....18
- DISPLAY INDICATORS** .....19
- TROUBLESHOOTING GUIDELINES** .....19

# 1 DATECS

BLANK DISPLAY.....	19
KEYPAD DOES NOT RESPOND .....	19
TRANSACTIONS FAIL TO PROCESS .....	20
<i>Check Smart Card Reader</i> .....	20
<b>MAINTENANCE AND CLEANING .....</b>	<b>20</b>
MAIN BATTERY REPLACEMENT.....	20
<b>SERVICE AND SUPPORT .....</b>	<b>21</b>
SERVICE RETURNS .....	21
<b>INDIVIDUAL PACKAGING .....</b>	<b>21</b>

## Revisions History

Version	Data	Change description
1.0.0	16.01.2018	First Release
2.0.0	20.12.2019	Added Section "REGULATORY"
2.1.0	12.02.2020	Updated Section "REGULATORY"
2.2.0	17.02.2020	Updated Section "REGULATORY"

## Regulatory

### **FCC ID: YRWSUMUPAIRV2**

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.

Any change or modification to the product not expressly approved by Datecs Ltd could void the user's authority to operate the device.

This device complies with portable RF exposure requirements in accordance with FCC rule part 2.1093 and KDB 447498 D01

## PREFACE

This guide is the primary source of information for setting up and installing SUMUP AIR v2.

### Audience

This guide provides simple descriptions of SUMUP AIR v2 features, as well as basic information for anyone installing and configuring SUMUP AIR v2.

### Organization

This guide is organized as follows:

[Chapter 1, Overview](#). Provides an overview of the SUMUP AIR v2.

[Chapter 2, Specifications](#). Discusses power requirements and dimensions of SUMUP AIR, etc.

[Chapter 3, Setup](#). Explains setup and installation of SUMUP AIR v2. This chapter tells how to establish connections with other devices.

[Chapter 4, Maintenance and Cleaning](#). Explains maintenance of SUMUP AIR v2.

[Chapter 5, Service and Support](#). Provides information on contacting your Datecs representative or service provider and information on how to order accessories or documentation from Datecs.

[Chapter 6, Troubleshooting Guidelines](#). Provides troubleshooting guidelines should you encounter a problem in terminal installation and configuration.

## Related Documentation




To learn more SUMUP AIR v2, refer to the following set of documents:

- *SUMUP AIR v2 Physical Security Features*
- *SUMUP AIR v2 Firmware API Specifications*
- *SUMUP AIR v2 Software Design Specifications*

## CONVENTIONS

Various conventions are used to help you quickly identify special formatting. [Table 1](#) describes these conventions and provides examples of their use.

**Table 1 Document Conventions**

Convention	Meaning	Example
<a href="#">Blue</a>	Text in blue indicates terms that are cross references.	See <a href="#">Guide Conventions</a>
<i>Italics</i>	Italic typeface indicates book titles or emphasis.	You <i>must</i> not use this unit underwater.
	The Information icon is used to highlight important information.	SUMUP AIR v2 is using USB VC communication.
	The caution symbol indicates hardware or Software failure, or loss of data.	The unit is not waterproof or dustproof, and is intended for indoor use only.
	The warning symbol is used as a warning when bodily injury might occur.	Due to risk of shock do not use the terminal near water.



## Overview

This chapter provides a brief description of Datecs's SUMUP AIR v2 device.

### SUMUP AIR v2 Payment Terminal

The SUMUP AIR v2 unit is a handheld PIN pad with an integrated smart and contactless card reader offering advanced security and payment processing capabilities to handle credit and PIN-based debit card transactions.

SUMUP AIR v2 supports both symmetric encryption algorithms (DES, 3DES, and AES) and asymmetric encryption (RSA). This device internally manages simultaneous multiple keys through either Fixed, Master Session- or DUKPT-based processes, and offers high performance smart card processing, as well as support for the new generation of 3-volt cards. The SUMUP AIR v2 sleek and stylish ergonomic design offers power and performance in a smart and contactless-integrated PIN pad device.



Datecs ships variants of SUMUP AIR v2 unit for different markets. Your unit may have a different configuration. However, the basic processes described in this guide remain the same, regardless of configuration.



#### Features At a Glance

- Delivers **power** and **usability** in a **small convenient** hand-held design.
- **Security** architecture meets specifications for PIN-entry devices (PED) and sophisticated **file authentication**.

The SUMUP AIR v2 provides the right combination of features and functions in a small stylish device that fits in the palm of your hand. This includes smart card and contactless reader in an integrated PIN pad, USB and Bluetooth communication.

## Features and Benefits

### Exceptional Ease of Use

- Ergonomic design is sleek, stylish, and lightweight for conveniently handing the unit to the consumer for PIN entry.
- Intuitive interface and large, colored control keys simplify training and reduce support requests.
- Highly readable display handles multiple languages.

### Critical Security Protection

- Incorporates tamper-detection circuitry to resist unauthorized intrusion and supports a broad spectrum of hardware and software-based security features.
- Integrated security modules simultaneously support sophisticated encryption (AES, DES, 3DES, RSA) and key management schemes, including single and 3DES Master Session, single, and 3DES Derived.

### Strong Feature Set

- Primary smart card reader support for synchronous and asynchronous smart cards.
- Support for international character sets and Unicode standard.
- SUMUP AIR v2 has received EMV Level 1 approval for contact smart card solutions.
- SUMUP AIR v2 has received EMV Level 2 approval for contact smart card solutions.
- SUMUP AIR v2 has received EMV Level 1 approval for contactless smart card solutions.
- SUMUP AIR v2 has received Visa PayWave (MSD qVSDC) approval for contactless smart card solutions.
- SUMUP AIR v2 has received American Express ExpressPay approval for smart card solutions.
- SUMUP AIR v2 has received Discover ZIP and D-PAS approval for smart card solutions.
- SUMUP AIR v2 has received PCI PTS 5.x SRED Security Certification.

## Device Specifications

<b>Processor</b>	ARM Cortex® M3 SecurityMicrocontroller	
<b>Memory</b>	64KB Internal ROM 256KB Internal RAM 1MB Internal Flash	
<b>Application Memory</b>	4MB Serial Flash	
<b>Display</b>	OLED Display, resolution 128 x 32 pixels	
<b>Keypad</b>	<ul style="list-style-type: none"> <li>• Capacitive touch</li> <li>• ON / OFF key</li> <li>• 10 numeric keys</li> <li>• 3 functional keys</li> </ul>	
<b>Smart Card Reader</b>	ISO7816, EMV L1 certified	
<b>Contactless Card Reader for payment applications (option)</b>	<ul style="list-style-type: none"> <li>• AMEX ExpressPay</li> <li>• Discover D-PAS</li> <li>• MasterCard Contactless</li> <li>• VISA PayWave</li> </ul>	
<b>Contactless Card Reader (option)</b>	ISO/IEC 14443 Type-A/MIFARE: - MIFARE MINI - MIFARE CLASSIC-1K, MIFARE CLASSIC-4K - MIFARE ULTRALIGHT, ULTRALIGHT-C - MIFARE PLUS 2K/4K - MIFARE DESFire - and others	ISO/IEC 14443 Type-B - supports most of the cards ISO/IEC 15693 - supports most of the cards JIS X 6319-4 - compatible with FeliCa
<b>Battery</b>	Rechargeable lithium-ion battery 3.7V, 1300 mAh	
<b>Connectivity</b>	<ul style="list-style-type: none"> <li>• USB                             <ul style="list-style-type: none"> <li>- Device</li> </ul> </li> <li>• Bluetooth Low Energy 4.2</li> </ul>	
<b>Audio indication</b>	Electro-Magnetic Buzzer	
<b>OS compatibility</b>	iOS, Android, Windows	
<b>Reliability</b>	<ul style="list-style-type: none"> <li>• 500 000 chip card cycles</li> </ul>	
<b>Certifications</b>		
<b>Dimensions (LxWxH), mm</b>	84 x 84 x 23	
<b>Weight, g</b>	147	
<b>Environmental</b>	Operating: -10oC to +40oC / 5 to 90% RH Storage: -15oC to +50oC / 5 to 90% RH	
<b>Drop Test</b>	1.5 m, 6 faces + 4 edges on concrete	
<b>Power Supply</b>	<ul style="list-style-type: none"> <li>• 5V through micro USB</li> </ul>	

## Device Operation

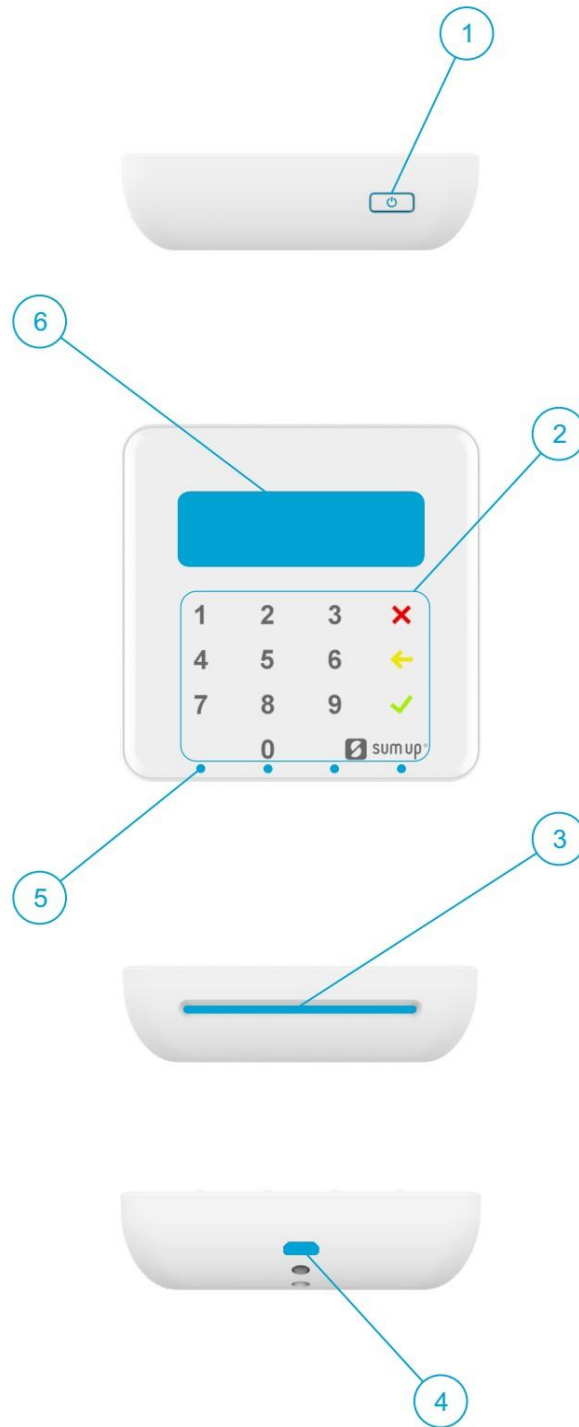



Figure 1

## 1 DATECS

1. Power Button
2. Capacitive keyboard
3. Smart Card Reader
4. Micro USB connector
5. Contactless LED indication
6. OLED Display


The battery is charged by the 5V USB connector.

The SUMUP AIR v2 is switched on and off by pressing the  button.

The SUMUP AIR v2 comes with a USB communication cable.

The USB communication cable is connected to the SUMUP AIR's mini-USB connector.


### Setup

When a SUMUP AIR v2 is switched on and the button  is kept pressed, on the display will be shown the name and the version of the Secure Boot Loader and the firmware. Service personnel can access two different system modes: **Service Mode** and **Application Download Mode**.


### SERVICE MODE

To enter Service Mode for key loading and test operations, the button DOWN has to be pressed while switching on the SUMUP AIR v2.

The following keyboard buttons can be used in service mode:

: move through the list one position upwards\*

: move through the list one position downwards\*

: selection of the active option

: return to previous level or exit the service mode

The following menu options can be selected in service mode:

INFO VERSION  
INFO HARDWARE  
INFO KEYS  
TEST DISPLAY  
TEST KEYBOARD  
TEST SCR  
KEYS DOWNLOAD  
DELETE DEA KEYS  
EXIT

## 1 DATECS

### INFO VERSION

Shows the serial numbers and the versions of the detached program modules:

DEV SN SUMUP AIR v2 serial number

USIP SN USIP serial number

USIP VER USIP version

ISBL VER USIP Boot loader version

HAL VER USIP Hardware Abstraction Layer (HAL) version

LOAD VER Secure Boot Loader (SBL) version and name

FW VER Firmware version and name

PROM VER Prompts version

APPL VER Application version and name

PKFA VER Version of the public key used for firmware authentication

PKAA VER Version of the public key used for application authentication

PKKA VER Version of the public key used for manufacturing keys authentication

### INFO HARDWARE

Gives information about the status of the following hardware properties:

BATT: indicates the voltage of the 1300 mAh battery

VBUS: indicates if external power supply is plugged in

CHARGE: indicates if the battery is charging






BATLOW: identifies low battery

### INFO KEYS

Shows the version of the following keys:

AIK keys version

### TEST DISPLAY

Performs a display test. Initially a blank screen is displayed. When  button is pressed once, completely black screen is displayed. When  button is pressed twice, checkmate background is displayed, its contrast can be changed with the  and  buttons. To exit the test at any time the button  has to be pressed.

### TEST KEYBOARD

Performs a keyboard test. At first the symbols of all the keys appear on the display. Pressing a key makes its corresponding symbol to disappear. The test ends when all the buttons have been pressed.

## 1 DATECS


### TEST SCR

Performs smart card reading tests. On the display appears a menu with the supported options. To perform a test, insert a card in the card slot and select the corresponding menu option:

1: RESET : performs card reset and returns the ATR

2: GET CHALLENGE : calls the command GET CHALLENGE and returns a random number

### KEYS DOWNLOAD

To download the Acquirer Initial Keys (AIK) the PINPAD has to be set in Keys Download Mode, in which it exchanges information in a secure way through the RS-232 interface using proprietary communication protocol. To exit the mode the  button has to be pressed.

### CLEAR DEA KEYS



Deletes the customer's DEA key hierarchy.

### EXIT

Exit the service menu forwarding the control to the application.



### APPLICATION DOWNLOAD MODE

To enter application download mode on the SUMUP AIR v2:

- Connect SUMUP to a PC using the supplied USB communication cable.
- Press and hold the  button.
- Wait for the first beep and LED2 to turn on.
- Release the  button.
- The pinpad is in the loader mode (SBL).

MODE: FW/APP is displayed and the PINPAD listens for application download commands on the serial interface. When application download is initiated, on the display is shown the progress in percentages of the downloading process.

To exit the mode, press  or  buttons.

The Application download process shall not be interrupted to prevent memory corruption. If the buttons  or  are pressed during the downloading process, the application integrity checking will fail on booting up and process will have to be repeated.

## 1 DATECS

### COMMUNICATION PARAMETERS

The default USB VC serial port communication parameters are the following:

115200bps  
8bit  
1 stop bit  
no parity

### APPLICATION SETTINGS

RS SPEED	115200*
USB MODE	HOST/DEVICE/DISABLE
BLUETOOTH	Settings Mode: ENABLE/DISABLE ADDR: MAC ADDRESS of the Bluetooth NAME: Bluetooth name PASS: Bluetooth password PAIR: DISCOVERABLE/HIDDEN AUTO: ENABLE/DISABLE VER: Bluetooth firmware version MASTER RESET: return to default settings PAIRING FW UPDATE
AUTO OFF	60min

*\*Default settings*

Note: Setting can vary depending on the application loaded. To clear Bluetooth settings use Bluetooth master reset.



## Smart Card Reader Use

The smart card transaction procedure can vary depending on the application loaded on the SUMUP AIR v2. Verify the proper procedure with your application provider before performing a smart card transaction.

### To Conduct a Smart Card Transaction

- 1 Position a smart card with the gold contacts facing upward ( [Figure 2](#) ).
- 2 Insert it into the ICC card reader slot in a smooth, continuous motion until it seats firmly.
- 3 Hand SUMUP AIR v2 to customer for PIN entry
- 4 Remove the card when the display indicates the transaction is completed.



**Figure 2**  
Smart card with the gold contacts upward



Leave the smart card in the card reader until the transaction is completed. Premature removal can void the transaction.

## Contactless Card Reading

The contactless card transaction procedure can vary depending on the application loaded on the SUMUP AIR v2. Verify the proper procedure with your application provider before performing a contactless card transaction.

In order to use the Contactless card reading function, special software must be used. Please contact your distributor in order to get the latest demo application and SDK.

### To Conduct a Contactless Credit/Debit Card Transaction

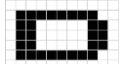
1. Place a contactless card to shown on the SUMUP AIR v2 display contactless logo.
2. Remove the card when the display indicates the transaction is completed.



Figure 3

## Display indicators

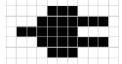
They can vary, depends of the installed application.



*Battery indication for discharged battery*



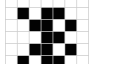
*Battery indication for fully charged battery*



*Outside power from USB cable – “Plug”*



*Battery is charging from USB cable or Power station – “Flash”*



*“Bluetooth” – active Bluetooth connection*



*“USB” - connection with USB*

## Troubleshooting Guidelines

This chapter lists typical examples of malfunction you may encounter while operating your SUMUP AIR v2 unit and steps you can take to resolve them.

The troubleshooting guidelines provided in the following section are included to assist successful installation and configuration of SUMUP AIR v2 units. If you are having problems operating your SUMUP AIR v2 unit, please read through these troubleshooting examples. If the problem persists even after performing the outlined guidelines or if the problem is not described, contact your local Datecs representative for assistance.



The SUMUP AIR v2 unit contains no user-serviceable parts. Do not, under any circumstance, attempt to disassemble the unit. Perform only those adjustments or repairs specified in this guide. For all other services, contact your local Datecs service provider. Service conducted by parties other than authorized Datecs representatives may void any warranty.

### Blank Display

When the SUMUP AIR v2 unit display does not show correct or clearly readable information:

- Check battery power.
- If the problem persists, contact your local Datecs service provider.

### Keypad Does Not Respond

If the keypad does not respond properly:

## 1 DATECS


- Check the display. If it displays is not blank, follow the steps outlined in [Transactions Fail To Process](#).
- If the problem persists, contact your local Datecs representative.

### Transactions Fail To Process

There are several possible reasons why the unit may not be processing transactions. Use the following steps to troubleshoot failures.

#### Check Smart Card Reader

- Perform a test transaction using several different smart cards to ensure the problem is not a defective card.
- Ensure that the card is inserted correctly (see [Smart Card Reader Use](#)).
- If the problem persists, contact your local Datecs representative.


	Due to risk of shock or damage, do not use the SUMUP AIR v2 unit near water, including a bathtub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool.
---	---

### Maintenance and Cleaning

SUMUP AIR v2 units have no user-serviceable parts.

To clean the unit, use a clean cloth slightly dampened with water and a drop or two of mild soap. For stubborn stains, use alcohol or an alcohol-based cleaner.

Do not attempt to clean the card readers. Doing so can void any warranty. For card reader service, contact your Datecs distributor or service provider.

	Never use thinner, trichloroethylene, or ketone-based solvents – they can deteriorate plastic or rubber parts. Do not spray cleaners or other solutions directly onto the keypad or display.
---	--

#### Main battery replacement

To replace the main battery of SUMUP AIR v2 please contact with your your local Datecs representative or service provider.

## Service and Support

For SUMUP AIR v2 problems, product service, and repair information, contact your local Datecs representative or service provider.

- International – Contact your local Datecs distributor

## Service Returns

All customers, please contact your local Datecs representative or distributor for assistance with your service, return, or replacement.

## Individual Packaging

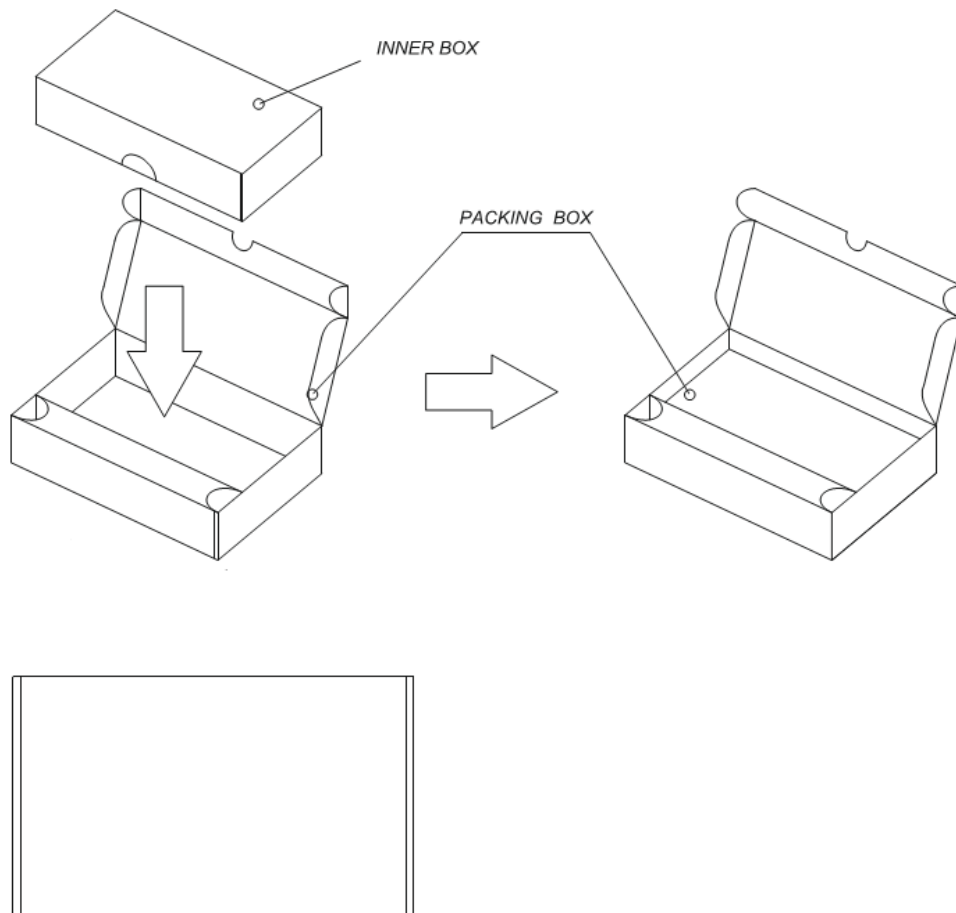


Figure 4

## 1 DATECS

### **FCC Statement**

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.

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 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.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.