



## BluePad-5500 Plus USER GUIDE



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BluePad-5500 Plus User Guide

## Revision History

Version	Date	Range	Description	Author
1.0.0	17.11.2020	All document	First release	Stefan Mitov
1.1.0	26.02.2021	Device Specifications	Updated device specification	Stefan Mitov
1.2.0	13.03.2024	Regulatory	Updated content	Rosen Ignatov

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## REGULATORY

### FCC NOTICE

#### FCC ID: YRW-BLUEPAD5500P

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:

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 to this device not explicitly approved by manufacturer could void your authority to operate this equipment. 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.

Specific Absorption Rate (SAR) information: This BluePad-5500 Plus meets the government's requirements for exposure to radio waves. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons regardless of age or health. FCC RF Exposure Information and Statement the SAR limit of USA (FCC) is 1.6 W/kg averaged over one gram of tissue. This device was tested for typical body-worn operations with the back of the BluePad-5500 Plus kept 5mm from the body. To maintain compliance with FCC RF exposure requirements, use accessories that maintain an 0mm separation distance between the user's body and the back of the BluePad-5500 Plus. The use of belt clips, holsters and similar accessories should not

contain metallic components in its assembly. The use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be avoided.

## PREFACE

This guide is the primary source of information for setting up and installing BluePad-5500 Plus.

### *Audience*

This guide provides simple descriptions of BluePad-5500 Plus features, as well as basic information for anyone installing and configuring BluePad-5500 Plus.

### *Organization*

This guide is organized as follows:

[Chapter 1, Overview](#). Provides an overview of the BluePad-5500 Plus.

[Chapter 2, Specifications](#). Discusses power requirements and dimensions of BluePad-5500 Plus, etc.

[Chapter 3, Setup](#). Explains setup and installation of BluePad-5500 Plus. This chapter tells how to establish connections with other devices.

[Chapter 4, Maintenance and Cleaning](#). Explains maintenance of BluePad-5500 Plus.

[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 BluePad-5500 Plus, refer to the following set of documents:

- *BluePad-5500 Plus Physical Security Features*
- *BluePad-5500 Plus Firmware API Specifications*
- *BluePad-5500 Plus 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.	BluePad-5500 Plus is using USB 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 BluePad-5500 Plus device.

### BluePad-5500 Plus

The BluePad-5500 Plus is a wireless POS terminal with 4.99” inch colorful display, with capacitive touch screen. The BluePad-5500 Plus offer an integrated smart, and contactless card reader, offering advanced security and payment processing capabilities to handle credit and PIN-based debit card transactions in an attended environment.

BluePad-5500 Plus supports both symmetric encryption algorithms (DES, 3DES, and AES) and asymmetric encryption (RSA). This device internally manages simultaneous multiple keys through either 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 BluePad-5500 Plus’ sleek and stylish ergonomic design offers power and performance in a smart card and Contactless PIN pad device.



Datecs ships variants of BLUEPAD-5500 PLUS 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.



Figure 1

### 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 BluePad-5500 Plus provides the right combination of features and functions in a small stylish device that fits in your hand. This includes a contactless card reader, smart card reader, an integrated PIN pad, and an WiFi and 4G wireless mobile.

## 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
- 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.

### Strong Feature Set

- Primary smart card reader support for synchronous and asynchronous smart cards.
- BluePad-5500 Plus has received PCI PTS 5.1 SRED Security Certification.

## Device Specifications

Processor for payment and security functions	ARM Cortex® M4 Security Microcontroller
Memory	<ul style="list-style-type: none"> <li>• 1MB Internal RAM</li> <li>• 1MB Internal Flash</li> <li>• 4MB External EEPROM Flash</li> </ul>
Processor for Android OS	Quad-Core ARM Cortex-A53
Memory	<ul style="list-style-type: none"> <li>• 8GB Flash</li> <li>• 1GB LPDDR3 RAM</li> <li>• Micro SD card</li> </ul>
Main Display	<ul style="list-style-type: none"> <li>• Type - IPS</li> <li>• Colors – 16.7M</li> <li>• Size 4.99 inch</li> <li>• Resolution – 720 x 1280</li> <li>• Backlight</li> <li>• Capacitive touchscreen</li> </ul>
Smart Card Reader	ISO7816, EMV L1 certified
Contactless Card Reader for payment applications	<ul style="list-style-type: none"> <li>• AMEX ExpressPay</li> <li>• Discover D-PAS</li> <li>• MasterCard Contactless</li> <li>• VISA PayWave</li> <li>• China Union Pay</li> <li>• JCB</li> </ul>
Contactless Card Reader	<ul style="list-style-type: none"> <li>• NFC-A/ISO 14443 Type-A</li> <li>• NFC-B/ISO 14443 Type-B</li> <li>• NFC-F/Felica</li> <li>• NFC-V/ISO 15693</li> </ul>
Barcode Reader (option)	• E3* – Image Sensor 1280 x 800 pixels, High Performance 2D Imager Scan Engine
Supported Barcode Types*	<ul style="list-style-type: none"> <li>• 1D Barcode Scanner Supported Symbologies: UPC/EAN, UPC/EAN with supplementals, Code128, GS1-128, Code 39, Trioptic, Code 32, Code 93, Code11, Matrix 2 of 5, Interleaved 2 of 5, IATA 2 of 5, Industrial 2 of 5, Codabar, Codablock F, MSI, Telepen, Code11, GS1 DataBar variants</li> <li>• 2D Imager Supported Symbologies: PDF417, MicroPDF417, Composite Code, Data Matrix, Maxicode, QR Code, MicroQR, Aztec, GS1 QR, Han Xin, Japan Postal, Australian Post, Data Matrix, US postnet, UK postal, MicroPDF417, Simple Datamatrix, Inverted Datamatrix, DOT code</li> </ul>
Camera	<ul style="list-style-type: none"> <li>• Main - 5 MP</li> <li>• Flash LED</li> </ul>
Battery	Rechargeable lithium-ion polymer battery 3.8V, 2500 mAh

Connectivity	<ul style="list-style-type: none"> <li>• USB <ul style="list-style-type: none"> <li>- Device</li> <li>- OTG</li> </ul> </li> <li>• USB pass-through Docking station</li> <li>• WLAN <ul style="list-style-type: none"> <li>- 2.4G/5G, 802.11 a/b/g/n/ac</li> </ul> </li> <li>• Wireless mobile Data for A1 version: <ul style="list-style-type: none"> <li>- LTE FDD Band 1, 3, 5, 7, 8, 19, 20, 26</li> <li>- LTE TDD Band 38, 40, 41</li> <li>- WCDMA Band 1, 5, 8</li> <li>- GSM/EDGE PCS 1900, DSC 1800, GSM 850, E-GSM 900</li> </ul> </li> <li>• Wireless mobile Data for C1 version: <ul style="list-style-type: none"> <li>- LTE FDD Band 1, 2, 3, 4, 5, 7, 12, 17, 19, 25, 26, 28A, 28B, 66</li> <li>- LTE TDD Band 38, 41</li> <li>- WCDMA Band 1, 2, 4, 5, 8</li> <li>- GSM/EDGE PCS 1900, DSC 1800, GSM 850, E-GSM 900</li> <li>- 2 x Slots for Nano SIM</li> </ul> </li> <li>• GNSS; GPS, Galileo, Glonass and Beidou</li> </ul>
Audio features	<ul style="list-style-type: none"> <li>• Electro-Magnetic Buzzer</li> <li>• Rear Speaker</li> <li>• Front Speaker</li> <li>• 3.5mm Audio Jack</li> <li>• Microphone</li> </ul>
Indications	<ul style="list-style-type: none"> <li>• Vibration motor</li> </ul>
Sensors	<ul style="list-style-type: none"> <li>• Proximity sensor</li> <li>• 3-axis accelerator sensor</li> </ul>
Buttons	<ul style="list-style-type: none"> <li>• ON / OFF key</li> <li>• 2 keys for barcode scanner (for version w/o barcode scanner, those buttons are volume up/down)</li> </ul>
OS	Android 10
Reliability	<ul style="list-style-type: none"> <li>• 500 000 chip card cycles</li> </ul>
Certifications	PCI PTS 5.1
Dimensions (LxWxH), mm	144 x 77.7 x 16.4
Weight, g	210
Environmental	<p>Operating: -20°C to +55°C / 35 to 85% RH</p> <p>Storage: -30°C to +70°C / 20 to 90% RH</p>
Power Supply	<ul style="list-style-type: none"> <li>• 5V through USB-C</li> <li>• 5V through Rear pads</li> </ul>

## Device Operation



Figure 2

- |   |                              |
|---|------------------------------|
| 1. Barcode reader   | 11. Display and Touch screen |
| 2. Front speaker  | 12. USB communication port   |
| 3. Scan buttons (for versions without barcode are volume buttons) | 13. 3.5mm Audio jack         |
| 4. Rear camera  | 14. Contactless card antenna |
| 5. LED Flashlight   | 15. Proximity sensor         |
| 6. Openings for rear speaker                                      |                              |
| 7. Rear pads for communication and charging                       |                              |
| 8. Power key (Display On/Off)                                     |                              |
| 9. Opening for Smart card   |                              |
| 10. Microphone  |                              |

## GETTING STARTED

BluePad-5500 Plus has rechargeable Lithium-Ion polymer battery. The battery can be charged from USB power adapter connected to USB port or when is attached to Docking station.

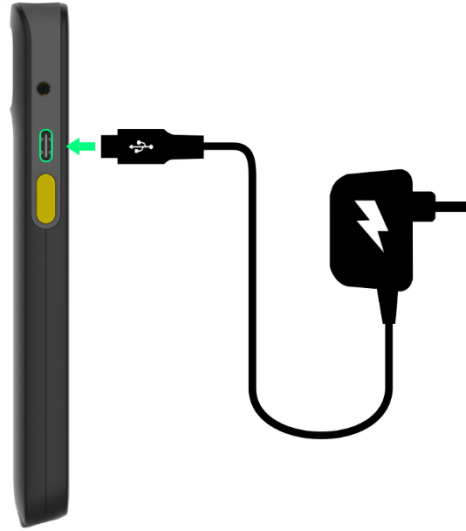


Figure 3



Battery of BluePad-5500 Plus is removable, for replacing please see “Main battery replacement”.

## Setup

BluePad-5500 Plus has several USB communication modes.

With attached USB OTG cable can provide power to accessory.

With attached USB cable with PC/MAC can provide:

- "File Transfer"
- "USB tethering"
- "MIDI"
- "PTP"
- "No data transfer"

With special board (D002301) and USB to Serial convertor can provide communication with Secure processor. Supported modes in this communication:

- Application download mode (Loading Firmware and/or Application to secure processor)
- System mode (Key Management)

### APPLICATION DOWNLOAD MODE

To enter in application download mode on the BluePad-5500 Plus, must be hold power button on special board. Release the button after characteristic sound (first beep) is played. In this mode can be update Firmware or Application of Secure Processor.

### SYSTEM MODE

To enter in application download mode on the BluePad-5500 Plus, must be hold power button on special board. Release the button after characteristic sound (second beep) is played. System mode is for key management.

### UPDATING SECURE PROCESSOR FIRMWARE/APPLICATION

Firmware and application on Secure processor can be updated via Android application.

Application processor firmware can be updated OTA.



## SOFTWARE VERSIONS

The product software version of Application processor can be retrieved using Android settings menu. From main screen by pressing “Settings” -> “About Phone”:

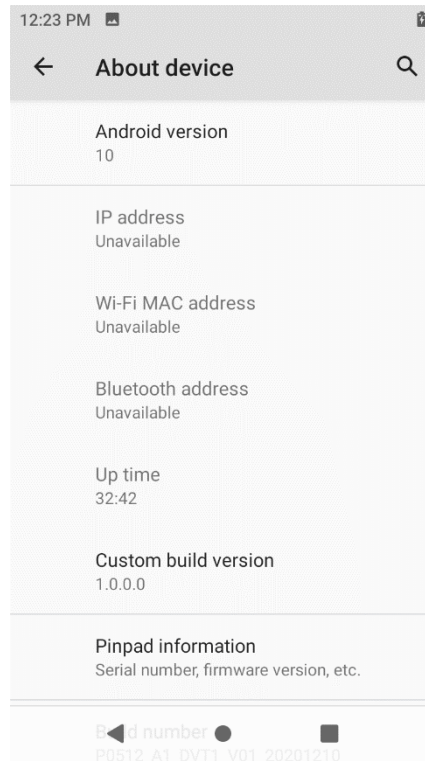


Figure 4

**Android version** (current version of Android)

**Software version** (custom build version)

**Build number** (number of the build)

The product firmware and/or application versions of Security processor can be retrieved using Android settings menu. From main screen by pressing “Settings”->”About Phone”>”Pinpad information”:

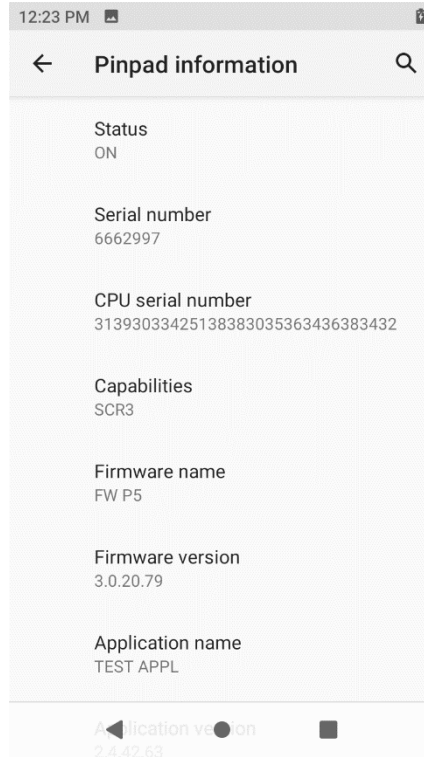


Figure 5

**Status** of the Secure processor On/Off

**Serial Number** of the device

**CPU serial number** – serial number

**Capabilities** of the device

**Firmware name** of the loaded FW

**Firmware version** of the loaded FW

**Application name** of the loaded AP

**Application version** of the loaded AP

**Firmware key version**

**Application key version**

**Loader key version**

## How to insert/remove SIM/SD cards

For accessing SIM/SAM/SD trays need to be removed back cover, this is showed on Figure 6.



Figure 6



The BluePad-5500 Plus support Nano SIM1 and SIM2 cards.  
The BluePad-5500 Plus support Micro SD cards.  
The BluePad-5500 Plus support SAM cards.

## Smart Card Reader Use

The smart card transaction procedure can vary depending on the application loaded on the BluePad-5500 Plus. 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 7).
- 2 Insert it into the ICC card reader slot in a smooth, continuous motion until it seats firmly.
- 3 Hand BluePad-5500 Plus to customer for PIN entry
- 4 Remove the card when the display indicates the transaction is completed.



Figure 7



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 BluePad-5500 Plus. Verify the proper procedure with your application provider before performing a contactless card transaction.

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

1. Place a contactless card to shown on the BluePad-5500 Plus display contactless logo (Figure 8).
2. Remove the card when the display indicates the transaction is completed.



Figure 8

## Reading barcodes with barcode engine

BluePad-5500 Plus has integrated barcode engine (depends on the configuration). Can be scanned 1D and 2D barcode types. For using this functionality need to be start the barcode application. After that to be pressed and hold one of the scan buttons, then position the scanning engine to the center of the barcode by aiming and the illumination box is over the outer edges of the barcode. Slowly pull back or forward the unit, while increasing or decrease the distance between the barcode and the scanning head, until the barcode has been read by the scanner. Barcode data will have shown on the used application.

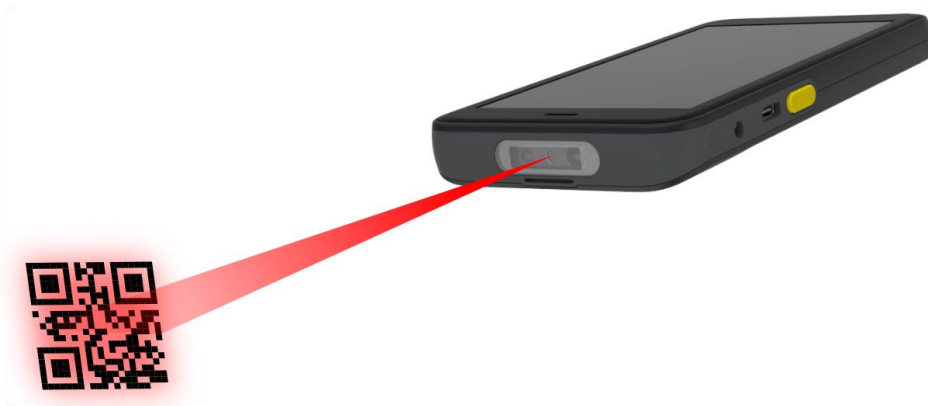



Figure 9

## Troubleshooting Guidelines

This chapter lists typical examples of malfunction you may encounter while operating your BluePad-5500 Plus 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 BluePad-5500 Plus units. If you are having problems operating your BLUEPAD-5500 PLUS 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.

	<p>The BluePad-5500 Plus 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.</p>
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### *Blank Display*

When the BluePad-5500 Plus unit display does not show correct or clearly readable information:

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

### *Touchscreen Does Not Respond*

If the touchscreen does not respond properly:


- 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 BLUEPAD-5500 PLUS 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*

BluePad-5500 Plus 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 display.
---	--

### *Main battery replacement*

For replacing the main battery of BluePad-5500 Plus need to be removed back cover. After that battery is pulled up as shown on the Figure 10.



Figure 10





Please contact with your local Datecs representative or service provider for receiving spare original battery.  
Don't leave BluePad-5500 Plus for long time without main battery, otherwise cryptographic keys can be deleted.

## Safety

- To prevent damage to your device's parts or internal circuits, do not use it in dusty, smoky, damp, or dirty environments or near magnetic fields.
- Using an unapproved or incompatible power adapter, charger, or battery may damage your device, shorten its lifespan, or cause a fire, explosion, or other hazards.
- Keep the device and battery away from excessive heat and direct sunlight. Do not place them on or in heating devices, such as microwave ovens, stoves, or radiators.
- Dispose the battery, and accessories according to local regulations. They should not be disposed of in normal household waste. Improper battery use may lead to fire, explosion, or other hazards.
- Do not use, store or transport the device where flammables or explosives are stored (in a gas station, oil depot, or chemical plant, for example). Using your device in these environments increases the risk of explosion or fire.

## *Service and Support*

For BluePad-5500 Plus 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 Ltd representative or distributor for assistance with your service, return, or replacement.