



BLUEPAD-5000 v-series USER GUIDE



BLUEPAD-5000 v-series User Guide

© 2017 Datecs, Ltd.

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

BLUEPAD-5000 v-series User Guide

Revision History

Version	Description	Date
1.0.0	First release	11.12.2017
1.1.0	Added section "Regulatory"	23.08.2019
1.2.0	Updated section "Regulatory"	16.09.2019

Contents

CONTENTS	4
REGULATORY	6
FCC NOTICE	6
PREFACE	7
AUDIENCE	7
ORGANIZATION.....	7
RELATED DOCUMENTATION.....	8
CONVENTIONS	8
TABLE 1 DOCUMENT CONVENTIONS.....	8
OVERVIEW	9
BLUEPAD-5000 PAYMENT TERMINAL	9
FEATURES AND BENEFITS	10
DEVICE SPECIFICATIONS	11
DEVICE OPERATION	12
SETUP	14
SERVICE MODE	14
INFO VERSION	14
INFO HARDWARE.....	15
INFO KEYS.....	15
TEST DISPLAY	15
TEST KEYBOARD	15
TEST MSR.....	15
TEST SCR.....	15
KEYS DOWNLOAD.....	16
CLEAR DEA KEYS	16
EXIT	16
APPLICATION DOWNLOAD MODE	16
COMMUNICATION PARAMETERS	16
APPLICATION SETTINGS.....	17
MAGNETIC CARD READER USE	19
TO CONDUCT A MAGNETIC CREDIT/DEBIT CARD TRANSACTION	19
SMART CARD READER USE	20
TO CONDUCT A SMART CARD TRANSACTION	20
CONTACTLESS CARD READING	21
TO CONDUCT CONTACTLESS CARD TRANSACTION	21

DISPLAY INDICATORS	22
TROUBLESHOOTING GUIDELINES.....	22
BLANK DISPLAY.....	22
KEYPAD DOES NOT RESPOND	23
TRANSACTIONS FAIL TO PROCESS	23
<i>Check Magnetic Card Reader</i>	<i>23</i>
<i>Check Smart Card Reader.....</i>	<i>23</i>
MAINTENANCE AND CLEANING	23
MAIN BATTERY REPLACEMENT	24
SERVICE AND SUPPORT.....	24
SERVICE RETURNS	24
INDIVIDUAL PACKAGING.....	25

REGULATORY

Regulatory information can be accessed from “Information version” menu in BluePad-5000. For more information how to access this menu can be found on section “Application Settings”.

FCC NOTICE

FCC ID: YRWBLUEPAD-5000

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.

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.

No changes shall be made to the equipment without the manufacturer’s permission as this may void the user’s authority to operate the equipment.

This device has been designed and complies with the safety requirements for portable RF exposure 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 BLUEPAD-5000.

Audience

This guide provides simple descriptions of BLUEPAD-5000 features, as well as basic information for anyone installing and configuring BLUEPAD-5000.

Organization

This guide is organized as follows:

[Chapter 1, Overview](#). Provides an overview of the BLUEPAD-5000.

[Chapter 2, Specifications](#). Discusses power requirements and dimensions of BLUEPAD-5000, etc.

[Chapter 3, Setup](#). Explains setup and installation of BLUEPAD-5000. This chapter tells how to establish connections with other devices.

[Chapter 4, Maintenance and Cleaning](#). Explains maintenance of BLUEPAD-5000.

[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-5000, refer to the following set of documents:

- *BLUEPAD-5000 Physical Security Features*
- *BLUEPAD-5000 Firmware API Specifications*
- *BLUEPAD-5000 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
Blue	Text in blue indicates terms that are cross references.	See Guide Conventions
<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.	Serial communication over USB work on the BLUEPAD-5000.
	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-5000 device.

BLUEPAD-5000 Payment Terminal

The BLUEPAD-5000 unit is a handheld PIN pad with an integrated smart, magnetic stripe, contactless card reader, and printer offering advanced security and payment processing capabilities to handle credit and PIN-based debit card transactions.

BLUEPAD-5000 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 BLUEPAD-5000 sleek and stylish ergonomic design offers power and performance in a smart, MSR, and contactless-integrated PIN pad device.



Datecs ships variants of BLUEPAD-5000 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 BLUEPAD-5000 provides the right combination of features and functions in a small stylish device that fits in the palm of your hand. This includes magnetic stripe, smart card, and contactless reader in an integrated PIN pad, with printer and optional Bluetooth, Wi-Fi, GPRS 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.
- BLUEPAD-5000 has received EMV Level 1 approval for contact smart card solutions.
- BLUEPAD-5000 has received EMV Level 2 approval for contact smart card solutions.
- BLUEPAD-5000 has received EMV Level 1 approval for contactless smart card solutions.
- BLUEPAD-5000 has received Visa PayWave approval for smart card solutions.
- BLUEPAD-5000 has received PCI PTS 5.1 SRED Security Certification.

Device Specifications

Processor	ARM Cortex® M3 Security Microcontroller	
Memory	64KB Internal ROM 256KB Internal RAM 1MB Internal Flash	
Application Memory	4MB Serial Flash	
Display	<ul style="list-style-type: none"> • Type – LCD, capacitive touchscreen, 65K colors • Size - 2.4 inches • Resolution – 240 x 320 pixels 	
Keypad	<ul style="list-style-type: none"> • ON / OFF key • 10 numeric keys • 5 functional keys • Backlight 	
Magnetic Card Reader	<ul style="list-style-type: none"> • 3-track bi-directional reading • ISO 7810, 7811 and 7813 	
Smart Card Reader	ISO7816, EMV L1 certified	
Contactless Card Reader for payment applications (option)	<ul style="list-style-type: none"> • AMEX ExpressPay MagStripe and EMV • Discover ZIP and D-PAS • MasterCard PayPass MagStripe and M/Chip • VISA PayWave MSD and qVSDC 	
Contactless Card Reader (option)	ISO/IEC 14443 Type-A/MIFARE: <ul style="list-style-type: none"> - 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 <ul style="list-style-type: none"> - supports most of the cards ISO/IEC 15693 <ul style="list-style-type: none"> - supports most of the cards JIS X 6319-4 <ul style="list-style-type: none"> - compatible with FeliCa
Battery	Rechargeable lithium-ion battery 7.4V, 1100 mAh	
Printing Mechanism	Direct line thermal printer	
Printing Width	48 mm, 384 dots per line	
Printing Resolution	8 x 8 dots/mm (203 dpi x 203 dpi)	
Printing Speed	Max 100 mm/sec	
Paper specifications	Width 58 mm Roll Max Diameter 40 mm	
Paper Loading	Easy paper loading	
Connectivity	<ul style="list-style-type: none"> • USB <ul style="list-style-type: none"> - Device • BT 3.0 Class 2 (optional): <ul style="list-style-type: none"> - SPP - Serial Port Profile - iAP - iPod Accessory Protocol • Wi-Fi IEEE 802.11 (optional): <ul style="list-style-type: none"> - Supporting b/g/n • Wireless mobile (optional): <ul style="list-style-type: none"> - GSM (850/900/1800/1900MHz) - UMTS (800/850/900/1900/2100MHz) - SIM Holder • SAM holder 	
Audio indication	Electro-Magnetic Buzzer	
OS compatibility	iOS, Android, Windows, Windows Phone 8, Windows Mobile	

Reliability	<ul style="list-style-type: none"> • 500 000 chip card cycles • 1 000 000 magnetic card swipes • 1 000 000 single button clicks
Certifications	CE, FCC, EMV Level 1, EMV Level 2, EMV Level 1 Contactless ,PCI PTS 5.1, Apple® MFi
Dimensions (W x D x H), mm	76 x 172 x 49
Weight, g	320
Environmental	Operating: -10°C to +40°C / 5 to 90% RH Storage: -15°C to +50°C / 5 to 90% RH
Drop Test	1.5 m, 6 faces + 4 edges on concrete
Power Supply	DC 9 V, 1 A through power jack

Device Operation



Figure 1

1. Thermal Printer
2. Display
3. Magnetic Stripe Reader
4. Power Button
5. Keypad
6. Smart Card Reader




Figure 2

7. Connector cover (slide to open)
 - Micro USB Connector
 - 9V External Power Supply Connector

8. Contactless Reader LED Indications


The battery is charged by the 9V power adapter connector.

The BLUEPAD-5000 is switched on and off by pressing the  button.

The BLUEPAD-5000 comes with a USB communication cable.

The USB communication cable is connected to the BLUEPAD-5000's micro-USB connector.

Setup


When a BLUEPAD-5000 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 BLUEPAD-5000.

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 MSR
TEST SCR
KEYS DOWNLOAD
DELETE DEA KEYS
EXIT

INFO VERSION

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

DEV SN BLUEPAD-5000 serial number

USIP SN USIP serial number

LOAD VER Secure Boot Loader (SBL) version and name

FW VER Firmware version and name

PROM VER Prompts version

HW Compatibility

IFMVER

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 2000 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.

TEST MSR

Performs magnetic card reading test. The test waits for a card to be inserted. On a successful card reading, the tracks data are displayed.


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 BLUEPAD-5000, the button  has to be maintained pressed while switching on the PINPAD. A characteristic sound is played and on the display appears the name and version of the Secure Boot Loader.

The message - 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.

COMMUNICATION PARAMETERS

The default RS232 serial port communication parameters are the following:

- 115200bps
- 8bit
- 2stop bit
- no parity

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

- 115200bps
- 8bit
- 1 stop bit
- no parity

APPLICATION SETTINGS

When the device is running can be accessed “SYSTEM MODE” menu, by pressing “Clear (<)” button.

SYSTEM MODE	SYSTEM INFO	INFO VERSION	Device SN
			USIP SN
			LD name and version
			FW name and version
			PROM Version
			Application name and version
			PINUTIL Version
			LIBPAY Version
			LIBPAYCL Version
			LIBSSL Version
			HW Capabilities
			PKFA/PKAA/PKKA Versions
	Regulatory Information		
	INFO HARDWARE	Battery and Charging Information	
	SETTINGS	RS SPEED	
		USB MODE	
		BLUETOOTH	MODE/MAC ADDRESS/ NAME /PASSWORD/PAIR/MASTER RESET
		Auto Off	
MENU			
BATTERY WARNING			
TEST DEVICES	Various test of the device functionalities		

Notes:

- 1. Setting can vary depending on the application loaded. To clear Bluetooth settings use Bluetooth master reset.*
- 2. To view FCC ID of BluePad-5000 and contains FCC ID modules, enter in "SYSTEM MODE" menu, then "SYSTEM INFO"->"INFO VERSION", after that scroll down to "Regulatory Information".*

Magnetic Card Reader Use

The magnetic card transaction procedure can vary depending on the application loaded on the BLUEPAD-5000. Verify the proper procedure with your application provider before performing a magnetic card transaction.

To Conduct a Magnetic Credit/Debit Card Transaction

- 1 Position a magnetic card with the stripe facing left
- 2 Insert it into the MS card reader slot and then quickly swipe it.
- 3 Hand BLUEPAD-5000 to the customer for signature or PIN entry



Figure 5

Smart Card Reader Use


The smart card transaction procedure can vary depending on the application loaded on the BLUEPAD-5000. 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
- 2 Insert it into the ICC card reader slot in a smooth, continuous motion until it seats firmly.
- 3 Hand BLUEPAD-5000 to customer for PIN entry
- 4 Remove the card when the display indicates the transaction is completed.



Figure 6
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 BLUEPAD-5000. 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.

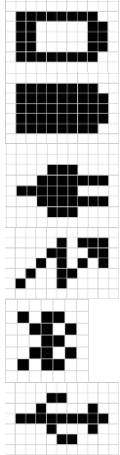
To Conduct Contactless Card Transaction

- 1 Place a contactless card to shown on the BluePad-5000 display contactless logo.
- 2 Remove the card when the display indicates the transaction is completed.



Figure 7

Display indicators



Battery indication for discharged battery

Battery indication for fully charged battery

Outside power from USB cable – “Plug”

Battery is charging from UBS 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 BLUEPAD-5000 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-5000 units. If you are having problems operating your BLUEPAD-5000 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-5000 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>
---	---

Blank Display

When the BLUEPAD-5000 unit display does not show correct or clearly readable information:

- Check battery power.
- In some cases this would be a ESD (Electro Static Discharge). Please turn on the device again.
- If the problem persists, contact your local Datecs service provider.

Keypad Does Not Respond

If the keypad 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 Magnetic Card Reader

- Perform a test transaction using one or more different magnetic stripe cards to ensure the problem is not a defective card.
- Ensure that you are swiping cards properly (see [Magnetic Card Reader Use](#)).
- If the problem persists, contact your local Datecs representative.

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-5000 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-5000 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 BLUEPAD-5000 please contact with your your local Datecs representative or service provider.

Service and Support

For BLUEPAD-5000 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

