DATECS

BluePad-55 v2 USER GUIDE

≋ DATECS

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-55 v2 User Guide

Version	Data	Change description
1.0.0	14.11.2018	Release version
2.0.0	28.05.2020	Added Section "Regulatory"

≣ DATECS

Contents

≋ DATECS

REGULATORY

FCC NOTICE

FCC ID: YRWSUM3GPLUS

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-55 v2 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. Device types: Smartphone has also been tested against this SAR limit. This device was tested for typical body-worn operations with the back of the BluePad-55 v2 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 phone. 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-55 v2.

Audience

This guide provides simple descriptions of BLUEPAD-55 v2 features, as well as basic information for anyone installing and configuring BLUEPAD-55 v2.

Organization

This guide is organized as follows:
Chapter 1, Overview. Provides an overview of the BLUEPAD-55 v2.

Chapter 2, Specifications. Discusses power requirements and dimensions of BLUEPAD-55 v2, etc.

Chapter 3, Setup. Explains setup and installation of BLUEPAD-55 v2.
This chapter tells how to establish connections with other devices.

Chapter 4, Maintenance and Cleaning. Explains maintenance of BLUEPAD-55 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 BLUEPAD-55 v2, refer to the following set of documents:

- *BLUEPAD-55 v2 Physical Security Features*
- *BLUEPAD-55 v2 Firmware API Specifications*
- *BLUEPAD-55 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
Blue	Text in blue indicates terms thatare cross references.	See Guide Conventions
Italics	Italic typeface indicates book titles or emphasis.	You *must* not use this unit underwater.
	The Information icon is used to highlight important information.	BLUEPAD-55 v2 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-55 v2 device.

BLUEPAD-55 v2

The BLUEPAD-55 v2 unit is a handheld PIN pad with an integrated smart and contactless card reader an optional Bluetooth module designed to be used with a variety of PDA's, offering advanced security and smart card processing capabilities.

BLUEPAD-55 v2 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-55 v2 sleek and stylish ergonomic design offers power and performance in a smart card and MSR-integrated PIN pad device.

> ℹ️ Datecs ships variants of BLUEPAD-55 v2 unit for different markets. Your unit may have a different configuration, such as a Bluetooth module, etc. 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-55 v2 provides the right combination of features and functions in a small stylish device that fits in the palm of your hand. This includes a contactless card reader, smart card reader, an integrated PIN pad, and an optional Bluetooth module.

Features and Benefits

Exceptional Ease of Use

• Bold, 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-55 v2 has received EMV Level 1 approval for smart card solutions.
• BLUEPAD-55 v2 has received EMV Level 2 approval for smart card solutions.
• BLUEPAD-55 v2 has received PCI PTS 5.x SRED Security Certification.

Device Specifications

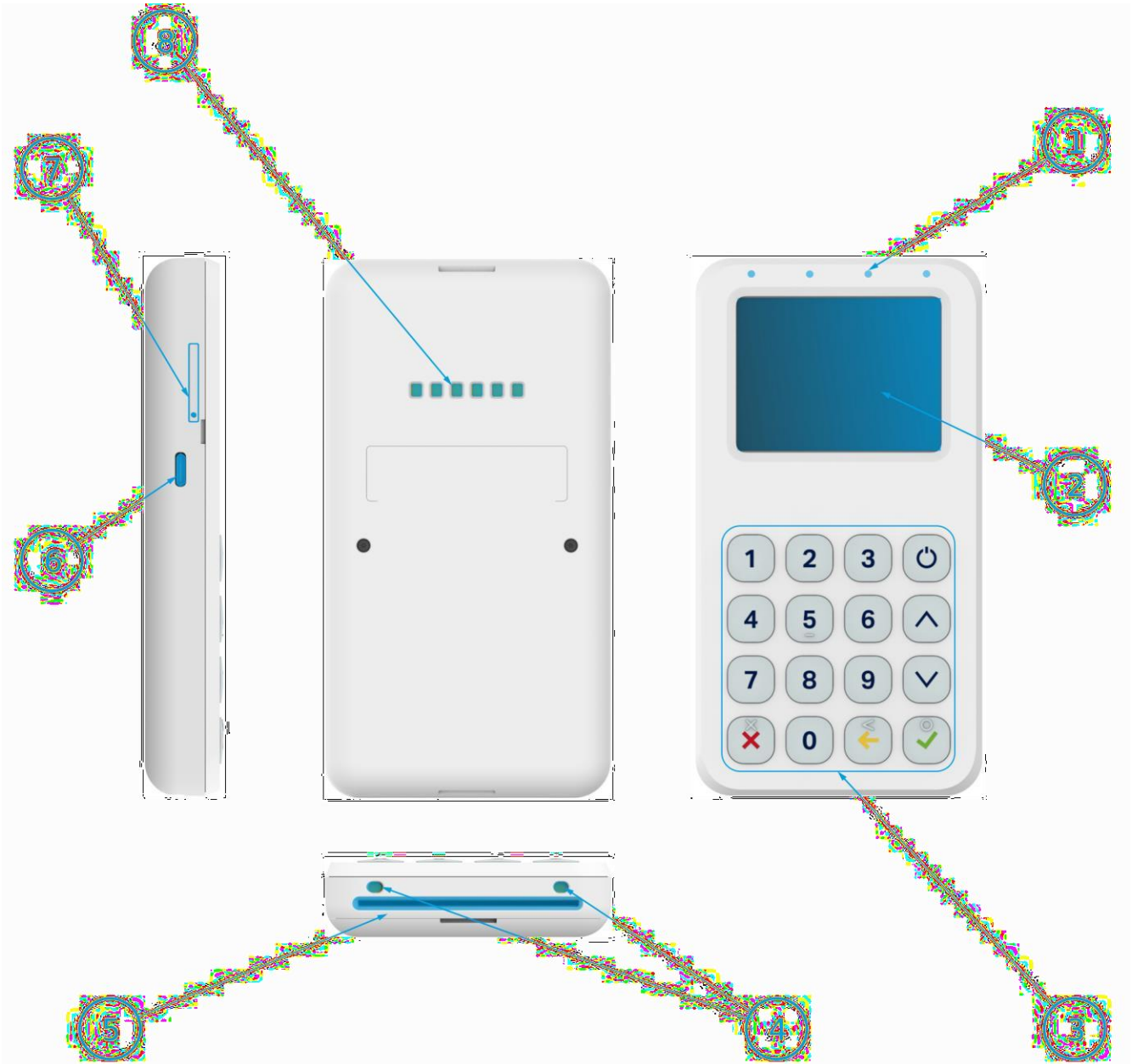|	
Processor	ARM Cortex® M3 Security Microcontroller
Memory	64KB Internal ROM 384KB Internal RAM 1MB Internal Flash
Application Memory	4MB Serial Flash 128MB NAND Flash (Optional) 512MB NAND Flash (Optional)
Display and Touchscreen	• Type – LCD, capacitive touchscreen, 65K colors • Size - 2.4 inches • Resolution – 240 x 320 pixels
Keypad	• ON / OFF key • 10 numeric keys • 5 functional keys
Smart Card Reader	ISO7816, EMV L1 certified
Contactless Card Reader for payment applications (option)	• AMEX • Discover • MasterCard • VISA PayWave
Battery	Rechargeable lithium-ion polymer battery 3.7V, 1180 mAh
Connectivity	• USB - Device • BLE 4.2 • Wireless - WiFi module, supported protocols; 802.11 b/g/n - Wireless mobile: LTE FDD B2/B4/B5/B12/B13, WCDMA B2/B4/B5 - Tray for Nano SIM • SAM module with tray for Nano SAM • UART pass through Docking station
Audio indication	Electro-Magnetic Buzzer
OS compatibility	iOS, Android, Windows
Reliability	• 500 000 chip card cycles • 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 (LxWxH), mm	133 x 71 x 18.5
Weight, g	180
Environmental	Operating: -10℃ to +40℃ / 5 to 90% RH Storage: -15℃ to +50℃ / 5 to 90% RH
Drop Test	1.5 m, 6 faces + 4 edges on concrete
Power Supply	• 5V through USB-C • 5V through charger station • 5V through Docking station
Accessories	• Docking station

Device Operation

Figure 1

1.   *Contactless LEDs status indications*
2.   *LCD Display with touchscreen*
3.   *Keypad*
4.   *Charging pads for charging station*
5.   *Chip chard reader*
6.   *USB connector*
7.   *SIM/SAM card tray*
8.   *Charging pads and UART communication (for Docking stations)*

The battery is charged by the USB power adapter, from connector position "6".

The BLUEPAD-55 v2 is switched on and off by pressing the ⏻ button.
There are four general purpose LEDs:

The BLUEPAD-55 v2 comes with a USB communication cable.

The USB communication cable is connected to the BLUEPAD-55's v2 mini-USB connector 1.

For reading of an ICC, the card has to be inserted manually into the card slot 3.
The card slides into the BLUEPAD-55 v2 bottom ICC slot until the end of the slot it reached and slight "click" is felt.
After reading, the card has to be pulled out manually until fully extracted.

Setup

When a BLUEPAD-55 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 BLUEPAD-55 v2.
The following keyboard buttons can be used in service mode:
UP: move through the list one position upwards
DOWN: move through the list one position downwards
OK: selection of the active option
C: 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-55 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 battery
VBUS: indicates if external power supply is plugged in
CHARGE: indicates if the battery is charging BATLOW:
identifies low battery
BTCON: shows active BLUETOOTH connection

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 OK button is pressed once, completely black screen is displayed. When OK button is pressed twice, checkmate background is displayed, its contrast can be changed with the UP and DOWN buttons.
To exit the test at any time the button C 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 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 C 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-55 v2, the button UP 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 C or ⏻ buttons.

The Application download process shall not be interrupted to prevent memory corruption. If the buttons C 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 Bluetooth serial port communication parameters are the following:
   115200bps
   8bit
   1 stop bit
   no parity
The default USB VC serial port communication parameters are the following:
   115200bps
   8bit
   1 stop bit
   no parity

SETTINGS IN APPLICATION(DEPENDS OF THE APPLICATION)

RS SPEED   115200*

USB MODE   DISABLE*/DEVICE/HOST

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*/120min/180min/240min/DISABLE/1min//5min/10min/

                    15min/30min/45min

Default settings

How to insert/remove SIM and SAM cards

Location of the SIM and SAM tray is show on Figure 2. To open device's SIM and SAM tray, insert a eject tool into the hole beside the tray.

Figure 2

	The BLUEPAD-55 v2 SIM and SAM tray is support only Nano size cards.

When tray is opened slide out (Figure 3) and insert cards (Figure 4). Place cards and slide in the tray and close (Figure 5).

Figure 3

Figure 4

Figure 5

ℹ️	SIM and SAM card must be placed on correct positions, they are shown on Figure 4.

Smart Card Reader Use

The smart card transaction procedure can vary depending on the application loaded on the BLUEPAD-55 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.
2 Insert it into the ICC card reader slot in a smooth, continuous motion until it seats firmly.
3 Hand BLUEPAD-55 v2 to customer for PIN entry
4 Remove the card when the display indicates the transaction is completed.
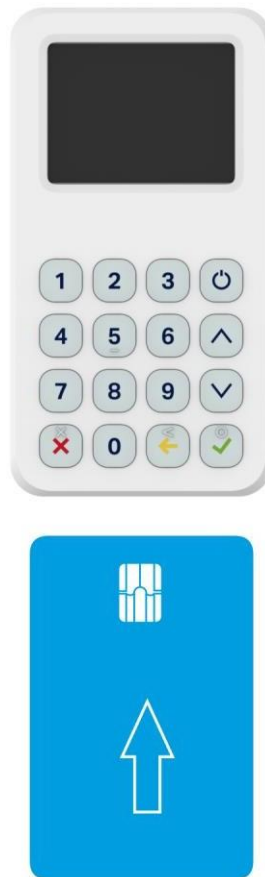
Figure 6

⚠	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-55 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 BluePad-55 v2 display contactless logo.
2. Remove the card when the display indicates the transaction is completed.
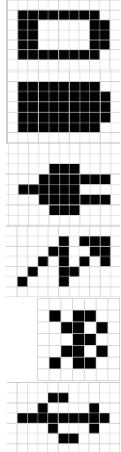
Figure 7

Display with touchscreen

The device is equipped with display, which is have capacitive touchscreen. The touchscreen is using for signature capture or easy Menu navigation.

Display Indications

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-55 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 BLUEPAD-55 v2 units. If you are having problems operating your BLUEPAD-55 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 BLUEPAD-55 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 BLUEPAD-55 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:
• 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-55 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

BLUEPAD-55 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 BLUEPAD-55 v2 please contact with your your local Datecs representative or service provider.

Service and Support

For BLUEPAD-55 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 Ltd representative or distributor for assistance with your service, return, or replacement.