INFINITE PERIPHERALS

STIMARE

DPP-450 USER MANUAL

DPP-450

Android™ is a trademark of Google Inc.

Made for iPod iPhone iPad

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COMPATABILITY

Made for

- iPhone 5
- iPhone 4S
- iPhone 4
- iPod touch (5th generation)
- iPod touch (4th generation)
- iPod touch (3rd generation)
- iPad (4th generation)
- iPad mini
- iPad (3rd generation)
- iPad 2

Android Support

- Android iOS 2.1 and higher

TECHNICAL DATA

General Specifications

Printing Specs	
Printing Method	Line thermal dot printing
Printing Speed	150mms/s (1200 dots/sec)
Print Width	104mm / 832 dots per line
Resolution	203dpi (8x8 dots/mm)
Dot pitch	Horizontal – 0.125 mm (8 dots/mm) Vertical – 0.125 mm (8 dots/mm)
Resident fonts	Font A: 12 x 24 dots (48 char. per line); Font B: 9 x 16 dots (64 char. per line);
Loadable fonts	Font C: 12 x 24 dots (48 char. per line); Font D: 9 x 16 dots (64 char. per line);
Logo Registration	1 Black and White size: 832 x 248 dots
Input Buffer	128 KB (131072 bytes)
Resident Barcodes	1D -EAN13, EAN8, UPC-A, UPC-E, Codebar, Code39, Code128 2D – PDF417, QR Code
Communications	RS232 C – max. 115200 bps, USB v 1.1, compatible with 2.0 Bluetooth® (Optional) – for iOS and Android platforms
Emulation	ESC/POS / LABEL (Continuous paper Mode, Black Mark Mode)
Thermal Paper	Thermal Paper Roll: 115 mm / Ø 45 mm, thickness 60 μm Label Paper Roll: 115 mm / Ø 45 mm
Electrical	
Power Supply	Rechargeable Li-ion battery (14.8 V / 2200 mAh) Battery capacity: Per Charge (~30,000 lines)
	AC adapter – DC 24 V, 5 A AC 100 – 240 V, 50/60 Hz
Magnetic Stripe Reader	Not applicable
Environment	
Temperature	Operating temp. +0°C to +40°C @ 35 to 85 % RH Storage temp. -20°C to +60°C @ 10 to 90% RH
Reliability	Printing Head: 50km (printing rate 25% max), (MCBF): 15,000,000 lines
Mechanical	
Dimensions	136 (W) X 123 (D) X 51 (H)
Weight	785 g (without paper) 990 g (with paper)

** Specifications subject to change without notice.*

BOX CONTENTS

Your DPP-450 comes with the following items listed below:

DPP-450 Thermal Printer

Belt Clip

Power Supply

Sample Paper Roll

RS-232 Interface cable

Software Drivers & SDK

Because of the continually evolving Driver & SDK to support new mobile devices, Drivers & SDK are distributed online and is available for download at our website indicated below. For the latest on using the DPP-450 Drivers & SDK, please refer to the SDK's documentation.

For the latest DPP-450 Drivers & SDK's, please visit our download area:

http://ipcprint.com/developer/downloads

GETTING STARTED

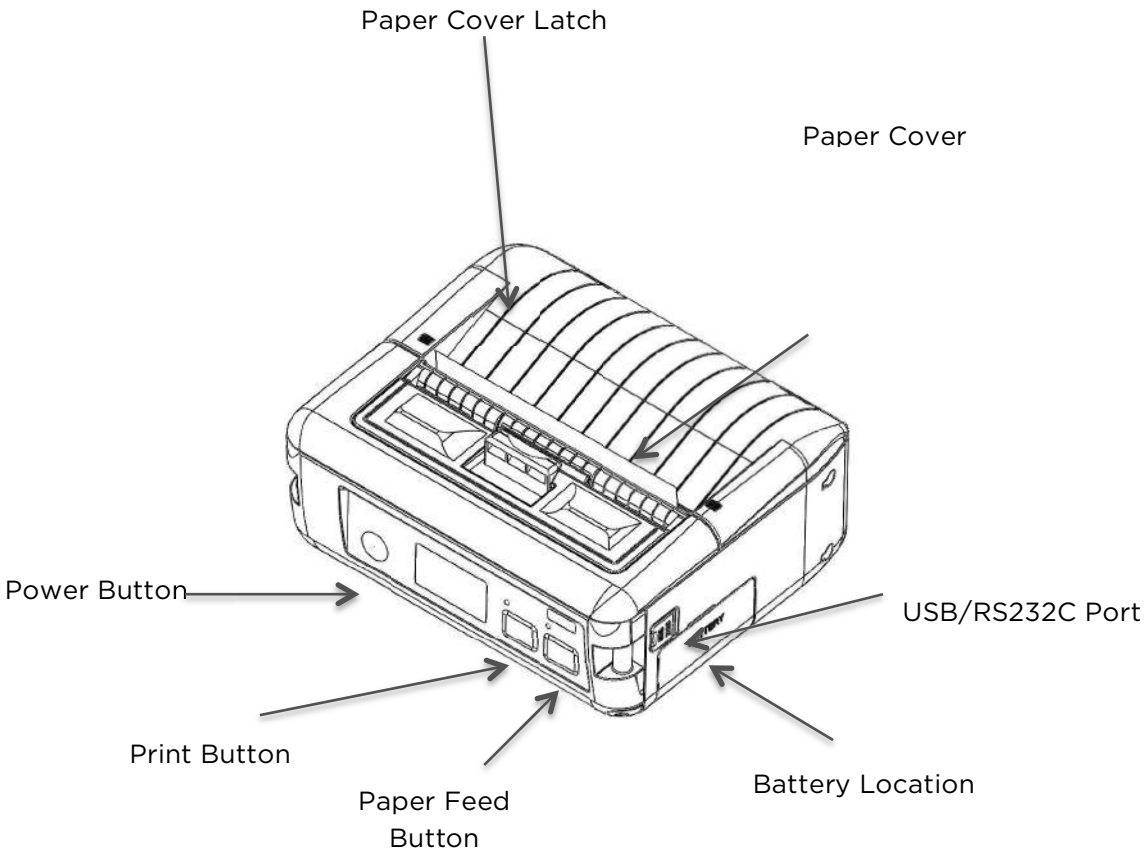
The DPP-450 allows you to print from your smartphone over Bluetooth®. Before using your DPP-450 the battery should be properly charged. The following Quick Start guide will help to get your DPP-450 ready for use.

Quick Start Guide

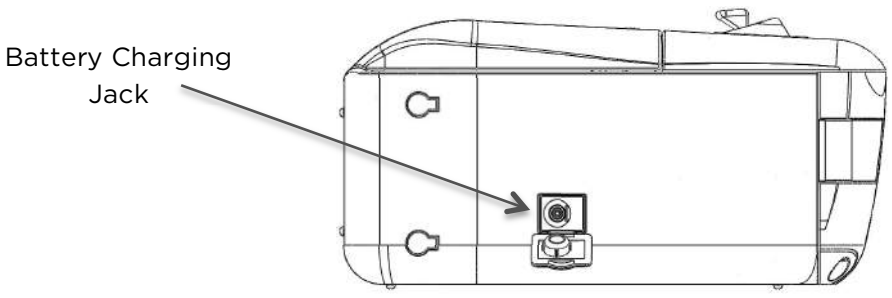
Step	What to do	Purpose	Where to find more information
1	Fully charge your DPP-450 as recommended in this manual	The battery pack should be fully charged before use to ensure long battery life	Charging Battery, Page 8
2	Load DPP-450 print media (thermal Paper)	DPP-450 requires Thermal paper for printing	Loading paper, page 10 and 11
3	Install DPP-450 Software	Printing requires software to be installed onto your mobile device	Printing software is not provided by Infinite Peripherals. account manager for recommendations on Third-party solutions. Developers should refer to the section in this manual on “Developing Solutions”.
4	Setup Bluetooth® pairing	Set up Bluetooth® pairing to allow DPP-450 to communicate with the Bluetooth®.	Bluetooth® Setup, page 22 and 23.

ABOUT YOUR DPP-450

DPP-450 Right View



DPP-450 Back View 2



CHARGING YOUR DPP-450

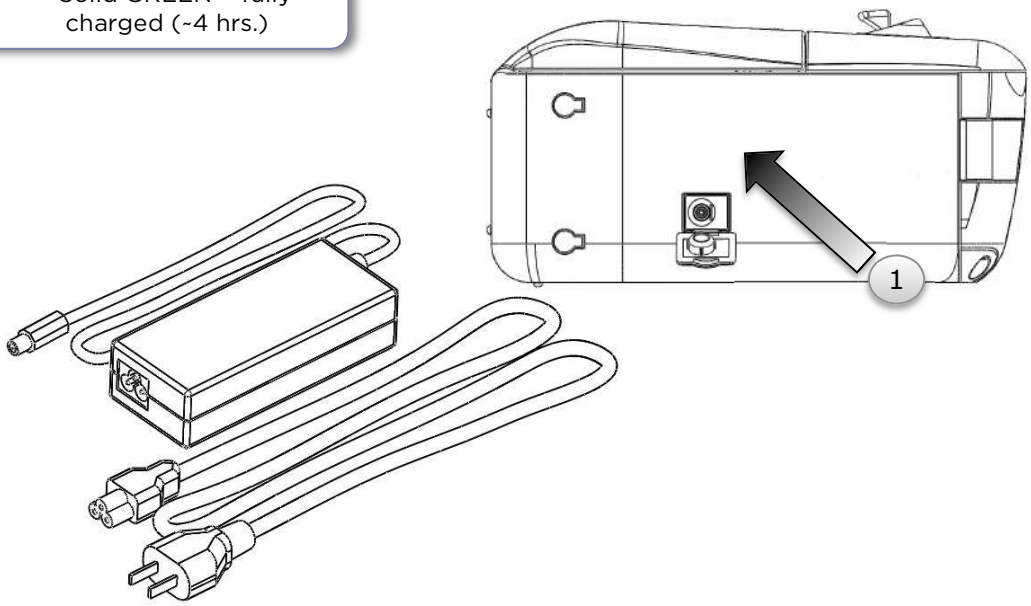
The DPP-450 uses a Lithium Ion rechargeable battery pack. Before first use, the battery pack should be charged for at least (4) hours from full empty.

To prevent electrical damage to the DPP-450 and/or battery pack, please use approved AC adaptors cables only.

Connect 24V charger cable to the DC charging jack as shown below. Insert cable to DC jack to start charging.

When the device is turn on (holding turn on/off button), the LCD display will show "CHG" text and a green led "CHARGE" is blink.

Solid RED = charging
Solid GREEN = fully charged (~4 hrs.)



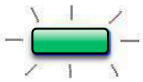
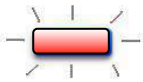
Warning:

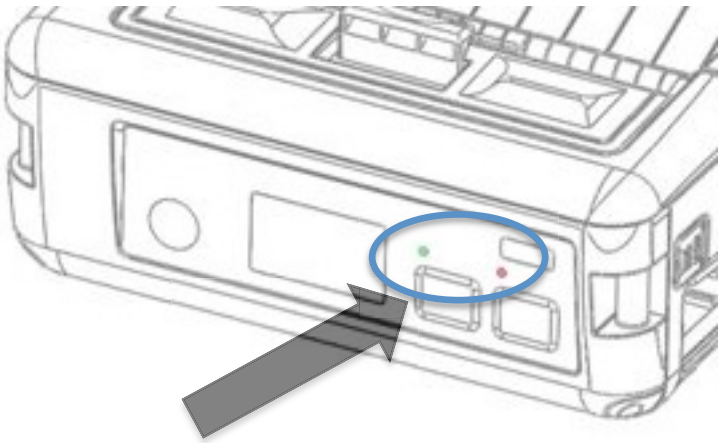
- When charging the DPP-450, only use the approved/recommended 24 volt @ 5 amp DC adaptors. Failure to do so may cause charging problems and potential damage to the DPP-450.

- When connecting the DC charging cable, take care as to not force the plug into the connector as doing so may cause damage to the connector.

STATUS AND OPERATIONAL MODES

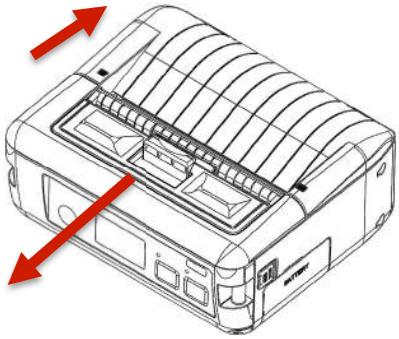
The DPP-450 uses LEDs to indicate various conditions of operation. This may be charging, active or online, battery low conditions. The following explains these conditions and LED indication.

LED		Status
CHARGE		Solid indicates battery charged.
		Flashing indicates charging.
STATUS		Off indicates printer ready.
		Solid indicates paper empty.
		Flashing indicates error.

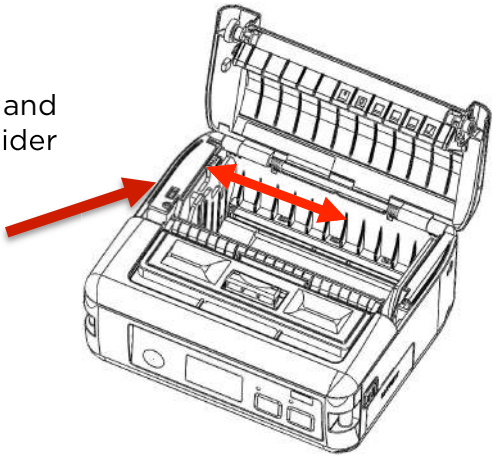


LOADING PAPER

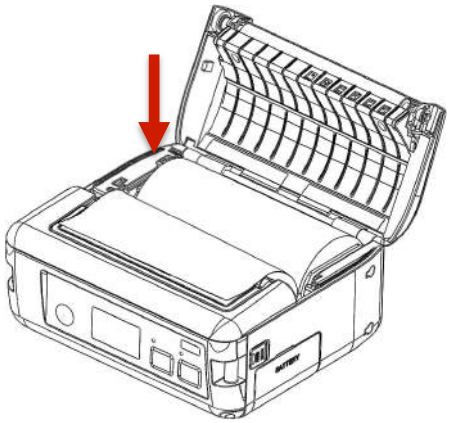
1. Push lever in the direction of the arrow to open paper cover.



2. To set paper size – pull up green lever and slide right for small paper or left for wider paper.

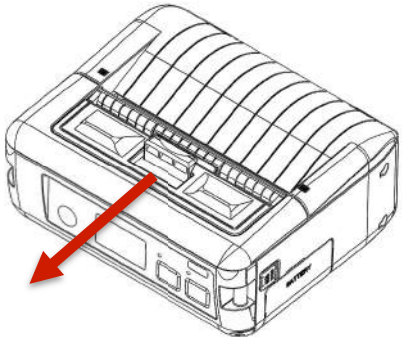


3. Drop in new paper roll with about ½ fold over the front of the printer as shown in the figure below then close the paper cover securely.



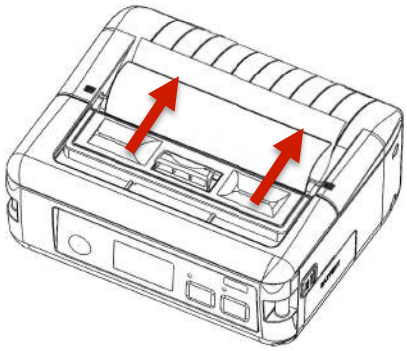
LABEL PAPER LOADING

1. Push lever in the direction of the arrow to open paper cover.



2. Drop in new label roll with about ½ fold over the front of the printer as shown in the figure below then close the paper cover securely

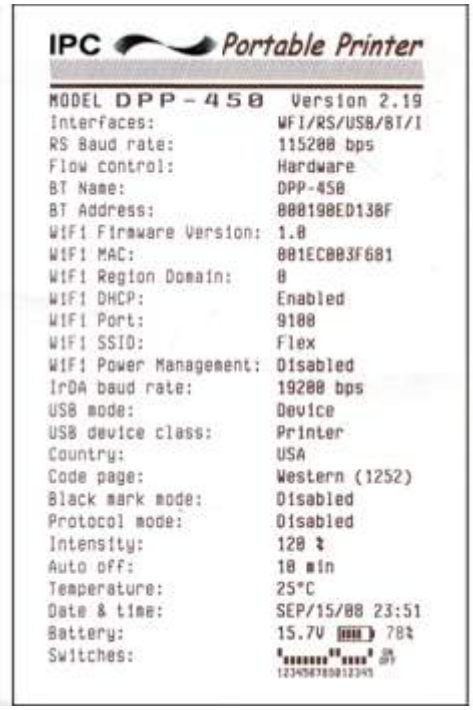
3. Slide peeler in the direction of the arrow below.



DIAGNOSTIC SELF-TEST

The DPP-450 has a built-in test pattern that shows the printer's current configuration as well as the various resident printer fonts. The self-test can also be used as a troubleshooting tool to determine printing problems or battery level. The steps below show how the self-test is printed activated.

- Holding <LF> button while power on for ~ 0.5 seconds (first beep) sound signals the short self-test will be printed as shown in the figure on the right.


IPC Portable Printer

MODEL DPP-450	Version 2.19
Interfaces:	WFI/RS/USB/BT/I
RS Baud rate:	115200 bps
Flow control:	Hardware
BT Name:	DPP-450
BT Address:	000198ED138F
WiFi Firmware Version:	1.0
WiFi MAC:	001EC003F681
WiFi Region Domain:	0
WiFi DHCP:	Enabled
WiFi Port:	9100
WiFi SSID:	Flex
WiFi Power Management:	Disabled
IrDA baud rate:	19200 bps
USB mode:	Device
USB device class:	Printer
Country:	USA
Code page:	Western (1252)
Black mark mode:	Disabled
Protocol mode:	Disabled
Intensity:	120 %
Auto off:	10 min
Temperature:	25°C
Date & time:	SEP/15/08 23:51
Battery:	15.7V 78%
Switches:	

DIAGNOSTIC SELF-TEST

- Holding <LF> button for ~ 5.5 seconds (third beep) while powering on the DPP-450 will signal the long-test will be printed as shown in the figure on the right.


MODEL DPP-450 Version 2.19
Two internal fonts: 9x16 & 12x24
Two loadable fonts: 9x16 & 12x24
Up to 48 characters per line using this font
Up to 64 characters per line using this font
Normal Bold Inverse Italic Underlined
Different sizes characters
Supported bar codes:
EAN13, EAN8, UPC-A, UPC-E, Code39, Code93
2 of 5 interleaved, Codabar, Code128
PDF417, QR Code
1234567890135
Loadable graphics
Interfaces: WFI/RS/USB/BT/I
RS Baud rate: 115200 bps
Flow control: Hardware
BT Name: DPP-450
BT Address: 000190ED13BF
WiFi Firmware Version: 1.0
WiFi MAC: 001EC003F681
WiFi Region Domain: 0
WiFi DHCP: Enabled
WiFi Port: 9100
WiFi SSID: Flex
WiFi Power Management: Disabled
IrDA baud rate: 19200 bps
USB mode: Device
USB device class: Printer
Country: USA
Code page: Western (1252)
Black mark mode: Disabled
Protocol mode: Disabled
Intensity: 120 %
Auto off: 10 min
Temperature: 26°C
Date & time: SEP/15/08 23:51
Battery: 15.7V 78%
Switches:

- Resident font sizes
- Characters per line
- Text formatting
- Resident character set
- Resident barcode symbols
- Printer's configuration

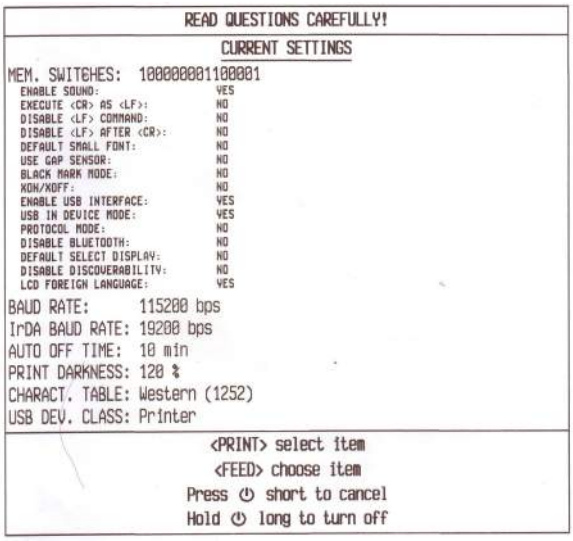
MEMORY SWITCH SETTING

The DPP-450 uses nonvolatile memory for storing some of the printer default configuration. The following table shows the available options.

Memory Switch Options	
Memory Switch (See command reference GS command)	1000000010
Baud Rate	115200 bps
Auto Off Time	10 minutes
Print Darkness	100%
Character Table	Western (1252)
USB Device Class	Printer

- Holding the <ON/OFF> button while power on the DPP-450 printer for more than 6 seconds will enter hardware setup mode. The “STATUS” (red led) will blink once and DPP-450 will print the message in the figure below:

- While in hardware setup mode, press <FEED> button to enter Hardware menu options. The DPP-450 will print the current saved settings.



- The figure below show the LCD in hardware configuration menu:

- Use the <PRINT> button to move down and use the <FEED> button to select selected.

CONFIGURATION MENU OPTIONS

- FACTORY DEFAULT
  - YES
  - NO
- MEMORY SWITCHES:
  - ENABLE SOUND Enable/Disable printer's buzzer
  - EXECUTE <CR> AS <LF> Disable CR/CR is executed as LF
  - DISABLE <LF> COMMAND Enable/Disable LF
  - DISABLE<LF>AFTER Disable LF immediately after CR
  - DEFAULT SMALL FONT Set the small font as default
  - USE GAP SENSOR Enable/Disable the GAP sensor
  - BLACK MARK MODE Enable/Disable the black mark sensor
  - XON/XOFF Enable/Disable XON/XOFF protocol
  - ENABLE USB INTERFACE Enable/Disable USB communication port
  - USB IN DEVICE MODE Changing the USB HOST/DEVICE mode
  - PROTOCOL MODE Enable/Disable Protocol mode
  - DISABLE BLUETOOTH ® Enable/Disable Bluetooth® communication
  - DEFAULT SELECT DISP Set the main display as default
  - DISABLEDISCOVERABILITY Enable/Disable printer's discoverability
- LCD FOREIGN LANGUAGE
- DISCARD - Exit without saving configuration
- ACCEPT - Exit with saving configuration
- BAUDRATE - Changing the printer communication speed (RS)
  - 115200 bps
  - 38400 bps
  - 31200 bps
  - 2400 bps
  - 4800 bps
  - 9600 bps
  - 19200 bps
  - 57600 bps
- IrDA BAUD RATE - Changing the IrDA communication speed
  - 19200 bps
  - 9600 bps
  - 38400 bps
  - 57600 bps
  - 115200 bps
- AUTO OFF TIME - Changing the printer's auto OFF time
  - 10 min.
  - 15 min.
  - 20 min.
  - 30 min.
  - 45 min.
  - 60 min.
  - 0 min.
  - 2 min.
  - 5 min.

- PRINT DARKNESS - Changing the printing darkness
  - 120 %
  - 140 %
  - 160 %
  - 60 %
  - 75 %
  - 90 %
  - 100 %
- CHARACTER TABLE - Changing the printer's character table
  - Western (1252)
  - CE (1250)
  - Turkish (1254)
  - Baltic (1257)
  - Cyrillic (1251)
  - Greek (1253)
  - Hebrew (1255)
  - Katakana
  - Arabic
  - Arabic (1256)
  - Arabic (1256A)
  - Arabic (1256F)
  - Thai (874)
  - VISCII
  - English (437)
  - Latin 1 (850)
  - Portuguese (860)
  - Lithuanian
  - Latin 2 (852)
  - Polish
  - Turkish (857)
  - Baltic (775)
  - Bulgarian (856)
  - Russian (866)
  - Latvian
  - Greek (737)
  - Hebrew (862)
- PAIRING INFO - Resetting pairing info
  - Enable/Disable saving pairing info
- Disable authentication
- Change pairing info
- Save pairing info
- USB DEV. CLASS - Changing the USB device class of the printer
  - Printer
  - Serial
- SAVE & EXIT MENU

DIAGNOSTIC INFORMATION

The DPP-450 has several built-in diagnostic modes.

LF Button operation Modes	
Holding <LF> button while power on for ~ 0.5 sec (first sound signal)	SHORT SELF TEST print
Holding <LF> button while power on for ~ 2.5 sec (second sound signal)	start DUMP mode. All input data are printed hexadecimal and as text
Holding <LF> button while power on for more than 8.5 sec (fifth 4-tone sound signal)	Enter firmware updating mode
Holding <ON/OFF> button while power on for	4 sec (first sound signal)
	If serial cable is connected (RS232 communication) – temporary forcing 9600 bps serial speed
	If no serial cable connected (Bluetooth® or USB communication) – starting a hardware menu for fast Bluetooth® pairing info reset
Holding <ON/OFF> button while power on for more than 6 sec	Enter hardware setup mode
Holding <ON/OFF> button while power off for more than	1 Second
Holding <ON/OFF> button while less than	1 second backlight is turn on for short time
Holding <ON/OFF> button and press <LF> button	Printing WIFI info

PROTOCOL MODE

Protocol mode is active when hardware switch 11 is on. The purpose of this mode is to give stronger real time access to the printer. All input data are sent in packets as described below. The printer returns an answer to the packet immediately.

Output packet format: Channel Command LenHi LenLo Data
Answer format: Channel Status LenHi LenLo Data

Channel: One byte:
Bits 0 – 6Channel number (Device type)
Bit 70: Send data; 1: Response

Command: One byte with possible value:

- 0: Open channel (No action – all channels always open)
- 1: Close channel (No action – all channels always open)
- 2: Send data
- 3: Request data
- >4: Application specific

Status: One byte:

	0	1
Bit 0	No error	Error occurred
Bit 1	ACK (Packet accepted)	NACK (Packed not accepted)
Bit 2	Channel and command OK	Wrong channel or command
Bit 3	Battery OK	Low battery
Bit 4	Printing head OK	Printing head too hot
Bit 5	Paper OK	Out of paper
Bit 6	Not defined	
Bit 7	Printer ready	Printer busy

Bit 7 is set, if:

- There are unprinted lines in the print buffer.
- There are bytes in the print buffer.
- The printer is executing a macro.
- The printer is executing self test
- The button <LF> is pressed – feeding paper.

LenHi: High byte of data length of data. 00h to 08h.
LenLo: Low byte of data length of data. 00h to FFh.
Data: 256*LenHi +LenLo data bytes.

The maximum packet length is 2048 bytes.

The answer differs from the command by bit 7 (MSB) in the channel number. If bit 7 is 0 then it is a command, if it is 1 then it is a response. Bit 0 in the status byte shows if there was an error accepting or processing the data block. If this bit is 1 the other bits show the type of the error. The printer never issues a transmission by itself. It always responds as an answer to a command.

The communication goes like this:
Host – command, Printer – answer; Host – command, Printer – answer; etc.

The defined channels are:

- 1Printer.
- 16 (10h) Optional card reader.

Commands for the printer channel (1):

- Command 2 - Send data

The data is copied into the printer's print buffer. If there's not enough space into the print buffer the packet is rejected, and a status byte with value 3 is returned in the answer.

- Command 3 - Receive data

If there is data to be transmitted from the printer to the host, it is transmitted in the data field of the packet, otherwise an empty packet is received. The application must take care to get the data fast enough from the output buffer or the data may be corrupt.

- Command 4 - Get printer status. 5 data bytes returned in response:
  - BufferHi BufferLo PrStatus Volt Temperature
  - BufferHiHigh byte of the count of free bytes in input buffer.
  - BufferLo Low byte of the count of free bytes in input buffer.
  - PrStatusPrinter status. The following bits defined:
    - Bit 0 Battery low
    - Bit 1 Too hot
    - Bit 2 No paper
  - Volt - The battery voltage in units 0.1V
  - Temperature - The head temperature in degrees Celsius.

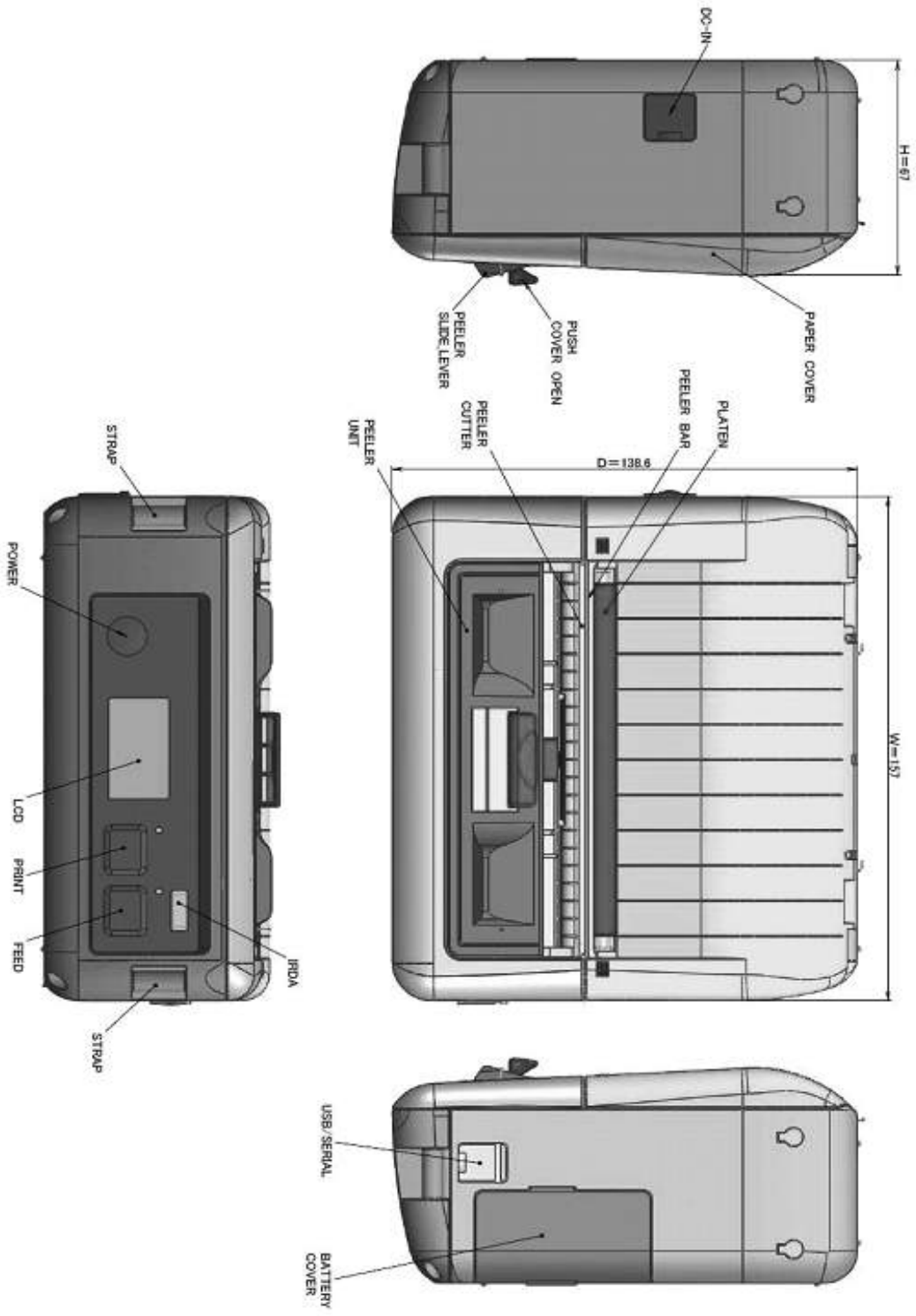
If free bytes in input buffer are more than 65535 (FFFFh), then FFFFh is returned.

Using channel 16 is the only way for full control over the optional card reader.

Communication example (all bytes hexadecimal):

- Send data:
  - >>>01 02 00 05 11 22 33 44 55
  - <<<81 00 00 00
- Send data with error:
  - >>>01 02 00 05 11 22 33 44 55
  - <<<81 01 00 00
  - >>>01 02 00 05 11 22 33 44 55
  - <<<81 01 00 00
  - >>>01 02 00 05 11 22 33 44 55
  - <<<81 00 00 00
- Receive data:
  - >>>01 03 00 00
  - <<<81 00 00 00
  - >>>01 03 00 00
  - <<<81 00 00 04 11 22 33 44
  - >>>01 03 00 00
  - <<<81 00 00 00
- Get status:
  - >>>01 04 00 00
  - <<<81 00 00 05 3F F8 01 49 27

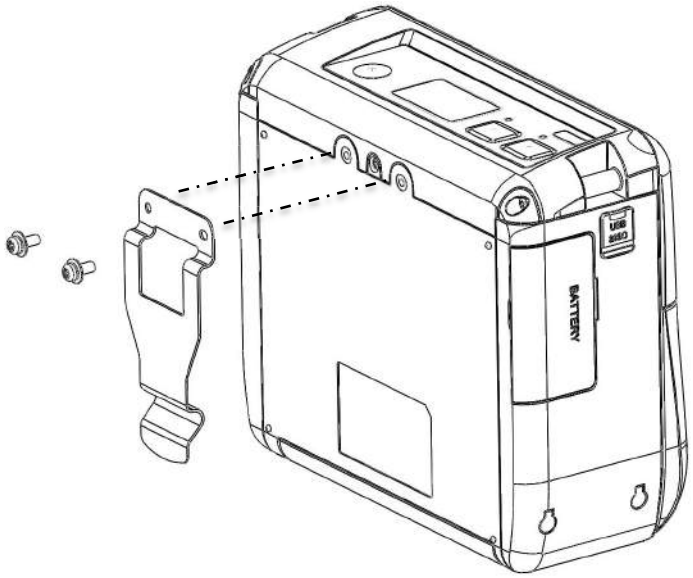
DIMENSIONS


DC-IN
H=67
PEELER SLIDE LEVER
PUSH COVER OPEN
PAPER COVER
PEELER UNIT
PEELER CUTTER
PEELER BAR
PLATEN
D=138.6
W=157
STRAP
POWER
LCD
PRINT
FEED
IRDA
STRAP
USB/SERIAL
BATTERY COVER

BELT CLIP ASSEMBLY

The DPP-450 is designed to be worn on the belt using belt clip accessory. To assembly the printer and belt clip, follow the steps below.

1. Attach the belt clip to the base of the DPP-450 as shown below.

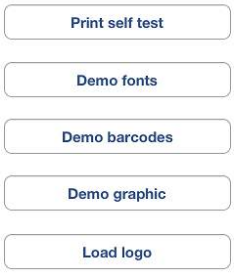


Caution:

- When securing the belt clip to the DPP-450 printer, use only the supplied screws to prevent damage to the printer.
- Failure to use the recommended screws may not securely fasten belt clip to printer and cause the printer to separate from belt clip.

BLUETOOTH® SETUP IOS

Enable Bluetooth® on iOS device. Select Bluetooth® device, after this Pair to DPP-450. Start app “Library Demo” and select “Print”.

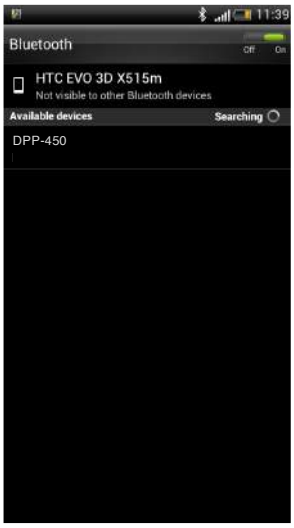


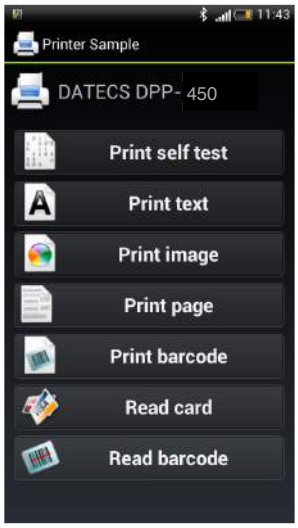
You can select “Print self test” to test Bluetooth® connection.

BLUETOOTH® SETUP ANDROID

Enable Bluetooth® and press search device. On the list with available device will show “DDP-450”, pair device. Default PIN is “0000”. When is paired open application “Printer Sample”. Select a device to connect “DPP-450”.

For testing Bluetooth® connection press “Print self test”.

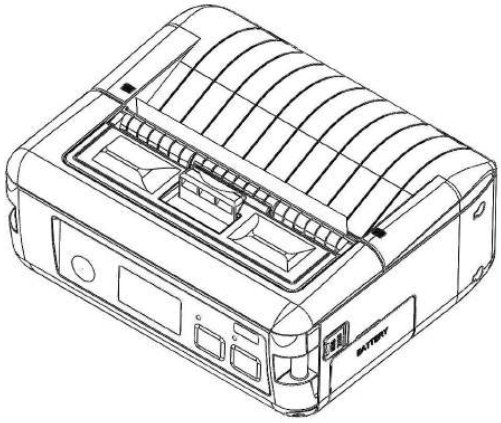




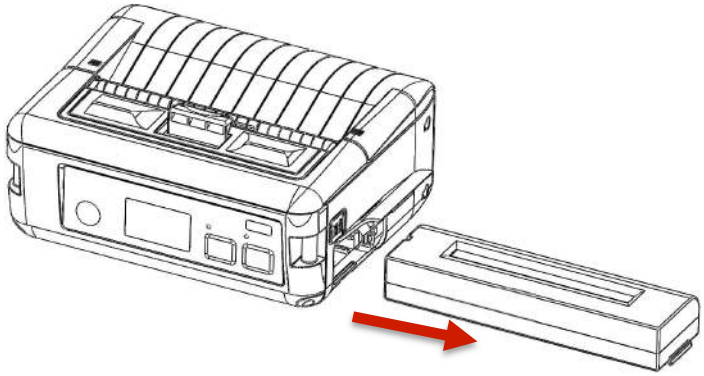
REPLACING BATTERY

To replace the battery in the DPP-450 thermal printer follow the steps below.

4. Open the battery cover as shown in the figure below:



5. Slide locking lever to release battery as shown in the figure below



Tips:

Disconnect all cables including AC adaptor and turn off the DPP-450 printer before attempting to remove the battery.

DEVELOPING SOLUTIONS

Integrating the DPP-450 into your mobile solution requires the use of the DPP-450 smartphone SDK. The SDK incorporates API specific to developing printing applications and using the capabilities of the DPP-450 mobile printer.

The table below shows the SDKs currently available for PDA & Smartphone devices.

OS	Language	SDK - IDE
Android	Java	Eclipse
Apple iOS	Obj. C	Xcode (see Linea SDK)

For details on using the DPP-450 SDK, please refer to the SDK's documentation.

For the latest DPP-450 SDK's, visit our developer web site at:

http://ipcprint.com/developer/downloads

TROUBLESHOOTING

If you are having problem printing refer to the table below for possible causes.

Item	Problem	Possible Cause
1	Paper feeds after issuing a print job but no printed text visible on paper.	Thermal media is specially coated on outside of roll. Remove paper roll and reload properly. See section "Loading Paper" for details on loading paper.
		Paper cover not installed properly. See section "Loading Paper" for details on replacing paper cover.
2	Status LED on RED continuously.	Paper not properly loaded. Press FEED button.
		Printer out of paper or Paper not properly loaded. See section "Loading Paper" for details on loading paper.
3	Text and/or graphics are printed very light.	Battery voltage low. See section on charging battery pack.
		Thermal media not imaging correctly. Verify that you are using the recommended thermal media.
4	Strange characters are printed when printing.	Battery voltage low. See section on charging battery pack.
5	Printer stops responding to print and paper feed commands.	Remove battery for 5 seconds and reconnect battery.
6	Printing is light or missing only on half of the print width.	Paper cover not properly installed. See section on loading paper. Mechanism jarred loose. Contact technical support.

RESIDENT COMMAND SET

No.	Command	Description
1	BEL	Sounds the buzzer
2	HT	Horizontal Tab command
3	LF	Printing a line and paper Feeding command
4	FF	Printing and paper feeding to the black mark position
5	CR	The operation of the command depends on the state of the configuration flags 2,3 and 4
6	DC2=	Image LSB/MSB select
7	DC3(	DC3 (Ruled line) commands sequence start
8	DC3+	Sets the ruled line ON
9	DC3-	Sets the ruled line Off
10	DC3A	Selects ruled line A
11	DC3B	Selects ruled line B
12	DC3C	Clears selected ruled line buffer
13	DC3D	Sets a single dot in selected ruled line buffer
14	DC3 F	Ruled line pattern set
15	DC3 L	Ruled line set
16	DC3 M	Selects ruled line combine mode
17	DC3 P	Ruled line 1 dot line print
18	DC3 p	Ruled line n dots line print
19	DC3 v	Ruled line image write
20	CAN	Canceling print data in page mode
21	ESC FF	Printing data in page mode
22	ESC RS	Sounds the buzzer
23	ESC SP	Setting character spacing
24	ESC #	Setting EURO symbol position
25	ESC $	Specifying the absolute horizontal position of printing
26	ESC %	Selecting/Canceling the printing of downloaded user character set

27	ESC &	Selecting user character set
28	ESC !	Specifying printing mode of text data
29	ESC *	Printing graphical data
30	ESC +	Switch's OFF the printer
31	ESC -	Selecting/Canceling underlining
32	ESC .	Printing self test/diagnostic information
33	ESC 2	Specifying 1/6-inch line feed rate
34	ESC 3	Specifying line feed rate n/203 inches
35	ESC <	Changes print direction to opposite
36	ESC =	Data input control
37	ESC >	Selecting print direction
38	ESC ?	Reading magnetic stripe card
39	ESC @	Initializing the printer
40	ESC CAL	Black mark mode sensor calibration
41	ESC D	Setting horizontal tab position
42	ESC E	Specifying/Canceling highlighting
43	ESC F	Filling or inverting the page area in page mode
44	ESC G	Specifying/Canceling highlighting
45	ESC I	Specifying/Canceling Italic print
46	ESC J	Printing and Paper feed n/203 inches
47	ESC L	Selecting page mode
48	ESC N	Reading programmed serial number
49	ESC R	Selecting country
50	ESC S	Specifying speed (bps) of the serial port
51	ESC T	Printing short self test
52	ESC U	Selecting/Canceling underlined printing
53	ESC V	Selecting/Canceling printing 90°- right turned characters
54	ESC W	Defining the print area in page mode
55	ESC X	Specifying max printing speed
56	ESC Y	Selecting intensity level
57	ESC Z	Returning diagnostic information

58	ESC \	Specifying relative horizontal position
59	ESC]	Loading the default settings stored in Flash memory
60	ESC ^	Saving current settings in Flash memory
61	ESC _	Loading factory settings
62	ESC `	Reading the Battery Voltage and Thermal head temperature
63	ESC a	Aligning the characters
64	ESC b	Increasing text line height
65	ESC c5	Enabling/Disabling the functioning of the button LF
66	ESC d	Printing and feeding paper by n- lines
67	ESC i	Feeding paper backwards
68	ESC o	Temporarily feeding paper forward
69	ESC pair=	Enabling/Disabling PAIRING info saving in Bluetooth® mode
70	ESC pwd=	Programming a new Bluetooth® password (PIN)
71	ESC r	Full command for sounding buzzer
72	ESC s	Reading printer settings
73	ESC u	Selecting code table
74	ESC v	Transmitting the printer status
75	ESC x	Setting the time interval for automatically switching Off the printer
76	ESC y	Setting USB response strings
77	ESCy BTH:	Enabling/Canceling printing of 180° turned characters
78	GS FF	Printing in page mode and returning to standard mode
79	GS $	Specifying the absolute vertical position in page mode
80	GS)	Setting printer flags (memory switches)
81	GS *	Defining a Downloaded Bit Image (logo)
82	GS /	Printing a Downloaded Bit Image
83	GS :	Starting/ending macro definitions
84	GS B	Enabling/Disabling inverse printing (white on black)
85	GS C	Read the Real Time Clock
86	GS H	Selecting printing position of HRI Code
87	GS L	Setting the left margin
88	GS Q	Printing 2-D barcodes

89	GS R	Filling or inverting a rectangle in page mode
90	GS S	Selecting 2-D barcode cell size
91	GS T	Selecting the print direction in page mode
92	GS U	Selecting standard mode
93	GS W	Setting the print area width
94	GS X	Drawing a rectangular box with selected thickness in page mode
95	GS Z	Printing the non blank page area only in page mode
96	GS \	Specifying the relative vertical position in page mode
97	GS ^	Executing macro
98	GS c	Setting the Real Time Clock
99	GS f	Setting the font of HRI characters of the barcode
100	GS h	Setting the height of the barcode
101	GS k	Printing a barcode
102	GS p	Settings for 2D barcode PDF417
103	GS q	Selecting the height of the module of 2D barcode PDF417
104	GS w	Selecting the horizontal size (Scale factor) of the barcode
105	GS x	Direct text print in page mode

6. Asian Languages Support

106	FS !	Specifying printing mode of two-byte text data
107	FS &	Selecting two-byte text mode (JIS or GB2312)
108	FS -	Selecting/Canceling underline mode for two-byte text mode
109	FS .	Canceling two-byte text mode
110	FS C	Selecting Shift-JIS mode (Japanese version only)
111	FS S	Specifying character spacing for two-byte text mode
112	FS W	Selecting double size characters for two-byte text mode

FEDERAL COMMUNICATIONS COMMISSION

Federal Communications Commission (FCC) Statement

15.21

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

15.105(b)

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.

Operation is subject to the following two conditions:

1) this device may not cause interference and

2) this device must accept any interference, including interference that may cause undesired operation of the device.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.