DATECS

USER'S MANUAL

ESC/POS
Thermal Printer
DPP-250

We wish you a pleasant work with DPP-250!

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CONTENTS

Main Features

DATECS DPP-250 is a mobile ESC/POS thermal printer with 2-inch wide printing mechanism. It can be used in dynamic working conditions and its abundant built-in features allow it to be widely used for different applications.

DATECS DPP-250 can quickly and easily print text and/or graphics, depending on customer's needs – barcodes, logo, etc.

DATECS DPP-250 is the latest in the series of DATECS mobile printers.

DATECS DPP-250 is one of the smallest and lightest mobile printers in the World.

DATECS DPP-250 offers all the features of other popular models of DATECS mobile printers: PP-50, PP-55, DPP-350, yet can easily fit in your pocket.

Features:

– Small and lightweight, for real mobility;
– High speed and low noise, owing to line thermal print;
– Easy paper-loading;
– Long lasting battery – max 20000 lines per charge
– Serial RS232 and USB interfaces;
– Supports protocol for POS and BARCODE;
– Capable of printing alpha-numeric and graphical data;
– Drivers for Pocket PC, Palm OS, Windows and Blackberry.

Configuration Options:

– Bluetooth interface;
– Magnetic Stripe Reader (3 track);
– Smart Card Reader;
– Built-in metal belt hook and neck lanyard.

1 Technical Specifications

DATECS DPP-250

Parameter		Description
Printing	Printing Method	Line thermal dot printing
	Printer mechanism	FTP-628MCL 103
	Resolution	203 dpi (8 x 8 dots/mm)
	Dot pitch	Horizontal – 0.125 mm (8 dots/mm) Vertical – 0.125 mm (8 dots/mm)
	Max. Print Width	48 mm / 384 dots per line
	Paper Feed System	Step
	Printing Speed (Max.)	60 mm/s (480 dots/sec) at 8.5 V
	Print lines per charge	20 000
Fonts	Resident Fonts	Font A: 12 x 24 dots (32 char. per line); Font B: 9 x 16 dots (42 char. per line);
	Loadable	Font C: 12 x 24 dots (32 char. per line); Font D: 9 x 16 dots (42 char. per line);
	Japanese vers. only **(option)** Chinese vers. only **(option)**	Font E (JIS and Shift-JIS): 24 x 24 dots (168 char. per line); Font F (GB2312): 24 x 24 dots (16 char. per line);
Media: Roll Thermal Paper	Width, mm	57
	Diameter, mm	45
	Thickness, μm	60
Resident Barcodes	1D	EAN 13 EAN 8 UPC A UPC E Codabar Code 39 Code 128
	2D	PDF417, QR Code
Logo Registration	1 Black & White	Size: 384 x 248 dots
Interfaces	Serial USB Bluetooth	RS232 C – max. 115200 bps USB v 1.1, compatible with 2.0 Option

1 Technical Specifications

DATECS DPP-250

Parameter		Description
Emulation	ESC/POS	Continuous paper Mode Label/Black Mark Mode
Readers	"Smart Card" Reader Magnetic Card Reader	Option 3-track head, ISO 7811 (Option)
Input Buffer		128 KB (131072 bytes)
Battery	Rechargeable Li-ion battery	7,4 V / 1100 mAh
Adapter	Model: Input: Output:	10AD-E AC 100 – 240 V, 1,3 A, 50/60 Hz DC 9 V, 1 A
Operation switches	Button **LF** Button **ON/OFF**	Paper feed, Self test, Dump Mode Switch On/Switch OFF
Power Switch		**ON/OFF**
Weight	Without paper: With paper:	295 g 350 g
Dimensions (mm)		86 (W) X 113 (D) X 57 (H)
Environment	Operating temperature conditions: Storage temperature conditions:	Temperature from 0°C to 40°C Humidity from 35% RH to 85% RH Temperature from -20°C to 60°C Humidity from 10% RH to 90% RH
Reliability	Printing Head: "Drop" тест: "Waterproof"	50 km paper long (printing rate 25% max)
Cables		RS-232 interface cable; Mini USB cable A to B cable (option)

SAFETY INSTRUCTIONS
which must be strictly observed!

⚠ **Warning**	**Indicates a situation, which if was not observed and handled properly, could result in serious injury.**
⚠ **Caution**	**Indicates a situation, which if was not observed and handled properly, could result in injury.**

⚠ Caution

- Prior to operation, read carefully DPP-250 safety instructions and save them for later reference.
- Do not drop or put foreign matter such as clips and pins into the printer. This may cause problems.
- Do not spill drinks such as tea, coffee and juice on the printer or spray insecticide on the printer. If drink or water is spilled, first be sure to turn the power off and then consult our service personnel.
- Be careful when moving or carrying the printer. Dropping the printer may cause injury or property damage.
- When cleaning the surface of the printer case, do not use the cloth that is soaked in thinner, trichloroethylene, benzine, ketone or similar chemicals.
- Operate the control panel properly. A careless, rough handling may cause problems or malfunction. Do not use such sharp-edged tool as a ballpoint pen for operation.
- When printer trouble occurs, do not try to dissemble it. Instead, consult our service personnel.
- Do not disassemble or modify the printer.

Discard or safely store the plastic packing bag.
This bag should be kept away from children.
If the bag is pulled over a child's head, it may cause suffocation.

DATECS
NOTICE

- Before use, be sure to read this manual. And keep it handy for reference when needed.
- **DATECS** reserves the right to change the content of this manual without prior notice.
- Reproduction, transfer, or transmission of the contents of this manual without prior consent is strictly prohibited.
- **DATECS** is not liable for any problems resulting from the use of optional products and consumable supplies other than the designated products contained herein.
- Do not handle, disassemble or repair the parts other than those specified in this manual.
- **DATECS** is not liable for any damage caused by user's erroneous use of the printer and inadequate environment.
- Data residing in the printer is temporary. Therefore, all data will be lost if power is lost. **DATECS** is not liable for any damage or loss of profits caused by data loss due to failures, repairs, inspections, etc.
- Please contact us if there are any mistakes or ambiguities within this manual.
  We would be grateful!

3 Confirmation of Carton Contents

DATECS DPP-250

When unpacking the printer, check carefully that the following accessories are included in the carton:

Item	Part Name
1	DPP-250 Thermal printer 
2	AC Charger 
3	1 Roll of thermal paper 
4	User's Manual 
5	DPP-250 Drivers
6	Interface cable

Because of the continually evolving Drivers & SDK to support new mobile devices, Drivers & SDK are distributed online andis available for download at our website indicated below:

http://datecs.bg

Front / right view

① Power **ON/OFF** Switch

② Paper Feed **(LF)**

③ **Magnetic Card Reader** (Option)

④ **Smart Card Reader** (Option)

⑤ Paper Cover Lever

⑥ Paper Cover Locking Lever

Front view / LEDS

① **ERR LED:**
it indicates the printer status.

② **BATT LED:**
it indicates the battery status.
and the process of reading
magnetic and Smart Card.

③ **BT LED:**
it indicates the PAIRING
of Bluetooth DPP-250
to other Bluetooth device.

Front / right view / connections

ON/OFF button and LF button Functions

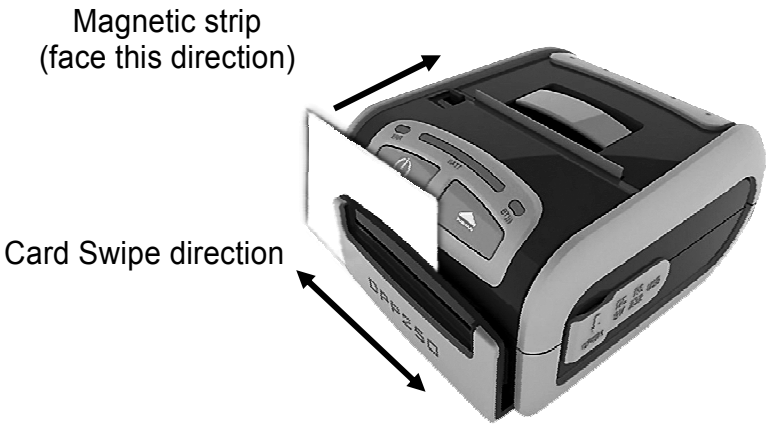
<table>
<tr><th>Button</th><th colspan="3">Functions</th></tr>
<tr><td>ON/OFF</td><td colspan="3">1. Switch ON / Switch OFF (holding ON/OFF button for more than 1 сек.) the printer.
2. Short pressing: indicates the battery status.
3. Holding ON/OFF button while power on for ~ 4 сек. (first sound signal)
– 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.
4. Holding ON/OFF button while power on for more than 6 сек. – enters hardware setup mode.</td></tr>
<tr><td rowspan="6">LF</td><td colspan="3">1. Pressing LF button – feeding the media while the button is pressed, after releasing the button the feeding stops.</td></tr>
<tr><td rowspan="4">2. Push and Hold while Power ON – Release after the number of beeps:</td><td>After ~ 0.5 sec and after the 1-beep</td><td>SHORT SELF TEST print</td></tr>
<tr><td>After ~ 2.5 sec and after the 2-beep</td><td>Hex DUMP mode</td></tr>
<tr><td>After ~ 4.5 sec and after the 3-beep</td><td>LONG SELF TEST print</td></tr>
<tr><td>After ~ 8.5 sec and after the 5-beep 4-tone beep</td><td>Program mode – loading the firmware</td></tr>
<tr><td colspan="3">3. Pressing LF button in hardware setup mode confirms the changes.</td></tr>
<tr><td colspan="3">4. LF switch operation in black mark mode:
Short pressing: feeds one line.
Continuous pressing (>1 sec): Feeds the paper to find next black marker (the same as sending FF command).</td></tr>
</table>

LEDS

LED	Function
ERR	**1**. It lights in **green** – the printer power is on. **2.** It lights in **red** – end of the paper or paper out. After the loading a new paper roll it lights in **green**. **3.** It flashes **green/red** – the printer thermal head is overheat. The printer stops printing. When the printer head temperature returns to normal the **STATUS LED** light **green** and the printer continues to print. **4.** It flashes **green** – low battery. **5.** When switching **ON** the printer, while the **LF** button is pressed, **red** and **green** lights are rotated after every beep (up to the fifth). **6.** In the long pressing the button it **flashes green/red** after a beep. After releasing the **ON/OFF** button it lights **green**.
BATT	**1.** When the adapter is swiched **ON** only one of the **BATT LED** diodes is lighting **green,** depending on the battery status (from **left** to **right** - **low** battery to **fully charged** battery). For details see Section "Charging the Battery". **2.** When the adapter is swiched **ON** the **BATT LED** diodes are lighting as shown on the illustrtion in Section "Charging the Battery", up to full battery charging.
	3. When a Magnetic Card is reading the **BATT LED** diodes are lighting simultaneously in both directions – from the middle to left and right (as shown on the illustration in Section "Charging the Battery". 
BT	**1.** It lights **blue** when PAIRING.

Magnetic Card Reader (option)

DPP-250 has optional a built-in magnetic card reader. The card reader incorporates a (3)-track magnetic read head requiring a single swipe to read field data from all three tracks.



The reader's magnetic head faces towards the front of the printer. When placing the card into the reader, the magnetic strip must be facing as show in the figure above. Keep the bottom edge of the card flat on the inner base of the reader to ensure that the magnetic strip passes over the read head evenly.

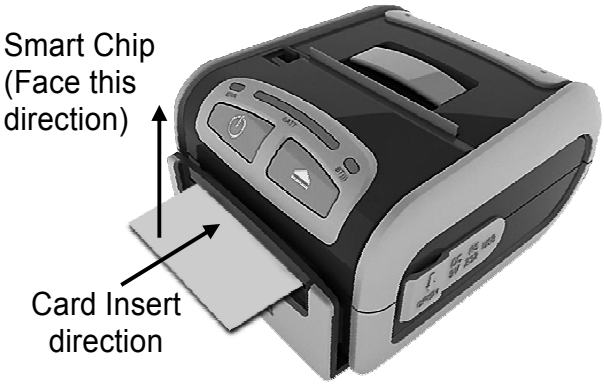
When swiping the card through the reader, use an even consistent motion from start to finish.

The speed of swiping can vary however the speed must be consistent from start to finish of the swipe in order to accurately read card data.

Smart Card Reader (option)

DPP-250 has a built-in smart card reader (optional). The smart card reader is designed to read information stored embedded on smart chips and process the information using device side software.

When placing the card into the reader, the smart chip must be facing to the front of the printer as show in the figure above. Insert the card in to the reader in to the reader until the card stops.



To use the magnetic and smart card reader features, special software must be used to read and process the card information. I you do not have card reading software, please consult your resaller to find out if this software is available or contact DATECS for recommendations on compatible third party software solution.

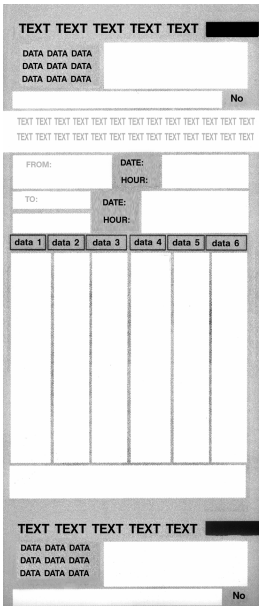
DIP Switches Settings

Switch	OFF	ON
Sw1	Bluetooth enabled	Bluetooth disabled
Sw2	Continuous paper mode	Black mark mode*
Sw3	None	Xon/Xoff protocol
Sw4	Normal operation mode	Protocol mode

The printer has two operation modes. They are determined by the state of switch **Sw2**:

OFF Continuous paper mode

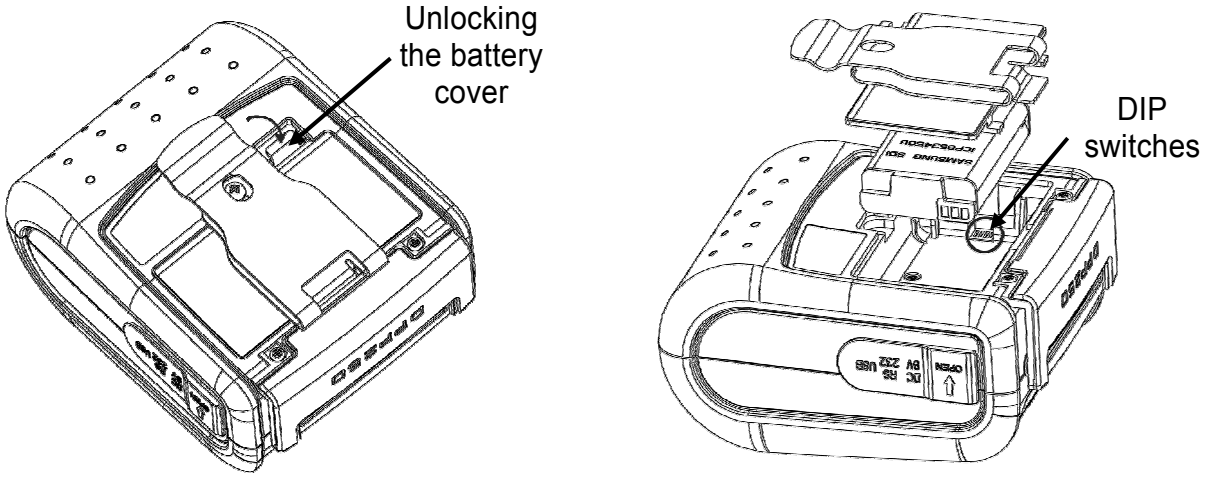
ON Black Mark searching mode



** The black mark searching mode is designed for accurate positioning starting print position on paper with printed information on it.*

DIP Switches Location

The DIP switch location is shown in the illustration below:



Printer Configuration

DPP-250 uses nonvoltatile memory for storing some of the printer default configuration. The following table shows the available options:

Memory Switches (see GS command)	**1000000011**
BAUD RATE	**115200 bps**
POWER OFF TIME	**10 min**
PRINT DENSITY	**100%**
CHARACTER TABLE	**WESTERN (1252)**
PAIRING INFO	**[SAVE=NO]**

To change the settings:

1. Switch OFF the printer.

2. Press and hold the **ON/OFF** button. The **ERR LED** flashes **red / green** every second.

3. Release the **ON/OFF** buton in about 6 sec. and wait for the printer to print out the current memory settings. Follow the printer instructions to make the necessary changes.

The pressing **LF (YES)** – confirms changes.
The pressing **ON/OFF (No)** – cancels changes.

To exit the hardware menu – hold the ON/OFF button for more than 1 sec.

Care must be taken when changing factory preset configuration information.

Memory Switches Setup

DPP-250 has 10 memory switches, which have the following action:

Flag	OFF	ON
1	Power ON/OFF sound disabled	Power ON/OFF sound enabled
2	**CR** (ASCII code 13) is not executed	**CR** is executed **LF** (ASCII code 10)
3	**LF** (ASCII code 10) is executed	**LF** (ASCII code 10) is not executed
4	**LF** immediately after **CR** as selected by flag 3	**LF** immediately after **CR** is not executed
5	Default is **Font A** (12x24)	Default is **Font B** (9x16)
6	"Cover open" sensor monitored	"Cover open" sensor disabled
7	Disable IrDa module	
8	Bluetooth in DISCOVERABLE mode	Bluetooth in NONDISCOVERABLE mode
9	USB interface disabled	USB interface enabled
10	USB in mode HOST	USB in mode DEVICE

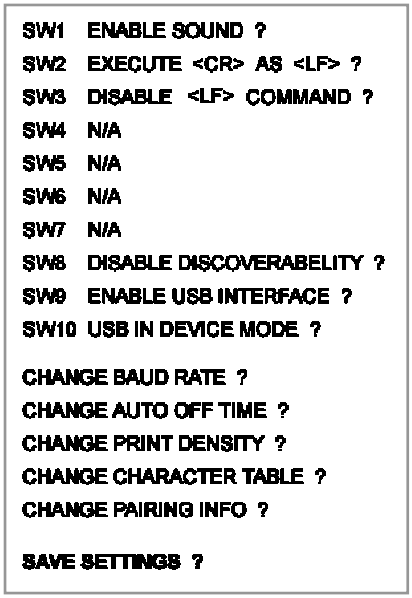
To change the settings:

1. Switch OFF the printer.

2. Press and hold the **ON/OFF** button.
The **ERR LED** flashes **red / green** every second.

3. Release the **ON/OFF** buton in about 6 sec.
and wait for the printer to print out
the current memory settings.

4. Follow the printer instruction
to make the necesary changes.



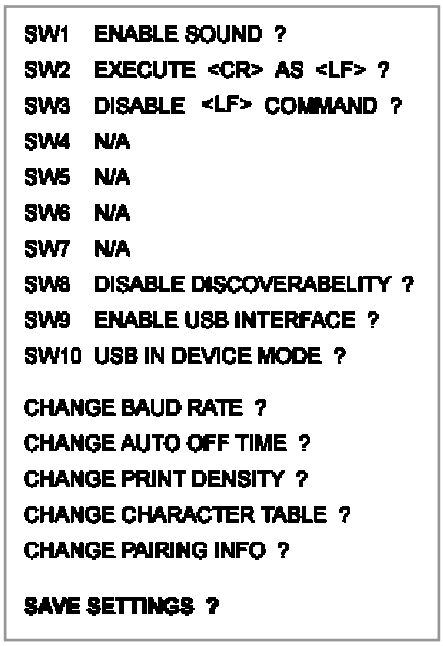
The pressing **LF (YES)** – confirms changes.
The pressing **ON/OFF (No)** – cancels changes.

Care must be taken when changing factory preset configuration information.

Saving and Clearing PAIRING Info

When saving **PAIRING** Information, the printer Bluetooth information of the last device connected paired) to the printer. Saving **PAIRING** info prevents the printer from asking for passkey upon initialization. The process for using this option is described below:

To speed this programming process, you may bypass the memory switch settings by indicating "NO" via pressing of the ON/OFF button when the printer prints "CHANGE MEMORY SWITCHES" as shown on page 17. This will advance you to the next level of setting where pairing can be found. The default **PAIRING** info option is **[SAVE=No]**.



To save PAIRING Info:

1. Change the **PAIRING** Info option to **[SAVE=YES]**.
2. Confirm **SAVE SETTINGS** pressing **LF.**
3. Turn the printer ON and it will PAIR with the first **Bluetooth device.**
4. The printer will now remember the **PAIRING** information and not prompt user for a passkey on every printer initialization.

To clear PAIRING Info:

1. Change the **PAIRING** Info option to **[SAVE= No]**.
2. Turn ON the printer and PAIR the new **Bluetooth device** to the printer.
3. The printer will prompt user for a passkey on every printer initialization.

Connecting Device

DPP-250 is designed to use different method of communicaions. The connection can be realized by a serial port, USB or Bluetooth. The figures below show how to attach the different devices to the DPP-250:

Serial/USB (Cabled) Version:

Bluetooth (Wireless) Version:

DPP-250 Bluetooth version uses Bluetooth wireless technology to connect to Bluetooth enable devices. See "BluetoothSetup" section for details.

Communication Configuration:

Communication options	Memory Switch Options (from 1 to 10)	Hardware Switch Options (1, 2 3, 4)
With PDA device • Via Bluetooth/USB/Serial	* * * * * * * **0 1 0**	*, OFF, OFF, **ON**
With PC (using Windows printer driver) • Via Bluetooth/USB/Serial	* * * * * * * **0 1 1**	*, OFF, OFF, **OFF**
With PC in Service mode • Via Serial Interface	* * * * * * * **0 1 1**	*, OFF, *, **ON**

**** Depending on user requirments can be 0 or 1.***
When not using Driver/SDK developer tools, set DIP Switch 4 to OFF.

Bluetooth Setup

Bluetooth setup enables the printer DPP-250 included Bluetooth option to communicate with other Bluetooth devices. For this purpose, use the corresponding to your device Bluetooth manager.

The following is a brief explanation on how to [**PAIR**] your Bluetooth DPP-250 to PDA and Smartphon.

BlackBerry Devices:

Add Device or Pairing Bluetooth peripherals to BlackBerry devices require the use of the device Bluetooth manager. The image on the right shows a typical BlackBerry Bluetooth manager.

WindowsMobile Devices:

Creating a New Partnership or Pairing Bluetooth peripherals to your WindowsMobile device require the use of the device Bluetooth manager. The image on the right shows a typical WindowsMobile Bluetooth manager.

Palm Devices:

Add Device or Pairing Bluetooth peripherals to your Palm devices require the use of the device Bluetooth manager. The image on the right shows a typical Palm Bluetooth manager.

When adding / pairing the DPP-250 as a Bluetooth device, use the [0000] pairing key when prompted.

Loading Drivers for DPP-350:

To print information from your device it is necessary to install DPP-250 printer drivers.

DATECS offers the following drivers for DPP-250:

DATECS ESC/POS printer drivers (on Windows NT/2k/XP/2k3+)

Windows printer drivers for all Datecs ESC/POS printers.

PrintSuite

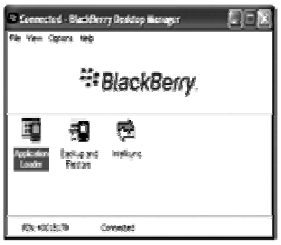
PrintSuit is a pack of applications and drivers for **DATECS PP-50/55, CMP-10, DPP-250** and **DPP-350** printers on **Windows/PalmOS/Windows Mobile/Windows CE.**
There are no developer tools and SDKs inside!

PPDevelop

Drivers, SDK, documentation and exemplary programs in different languages, giving developers access to all the functionality of the printers and optional modules. Current versions of application programs, drivers and SDK are distributed online and are available for download at the website, indicated below:

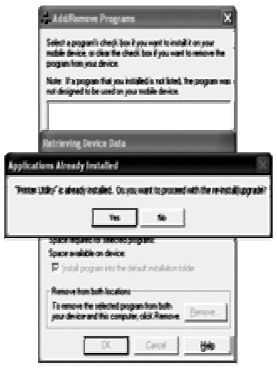
www.datecs.bg

Loading DPP-250 drivers for PDA or Smartphones:



BlackBerry Decktop Manager, shown in the figure on the right is used to load third party softawere on your device. Please, review your device's documentation on how to use the Application Loader Option to load software on to your device.

Windows Mobile Devices:



Active Sync Manager shown in the figure on the right is used to load third party softawere on your device.

Please, review your device's documentation on how to use the **Active Sync Manager** to load new software on to your device.

In most of cases you only need to run the DPP-250 installer to start the instalation.

PALM devices

Palm Install Manager Application shown in the figure on the right is used to load third party softawere on your device. Please, review your device's documentation on how to use the **Palm Install Manager Application** to load new software on to your device.

In most of cases you only need to drag & drop DPP-250 PRC files in installer and click ADD.

Charging the Battery

DPP-250 uses a rechargeable Lithium Ion battery pack. Before first use, the DPP-250 battery pack should be charged for at least 4 hours.

To prevent electrical damage to the DPP-250 and/or battery pack, please use approved AC Charger only.

Charging the battery and the **BATT LED** and **ERR LED** status are shown in the illustration below:

BATT LED, depending on the battery status
(from **left** to **right** - **low** battery to **fully charged** battery).

A short pressing the button **ON** indicates the battery status. 1,2 3, 4 or 5 diodes are lighting green, depending on the battery status. When charging the last of them (from left to right) – is flashing.
When fully charged battery all **BATT LED** diodes are lighting (no flashing diodes).

ERR LED *flashes* ***green,*** *that indicates* ***LOW BATTERY.***

The Lithium Ion battery pack should be fully charged before use to ensure long battery life.

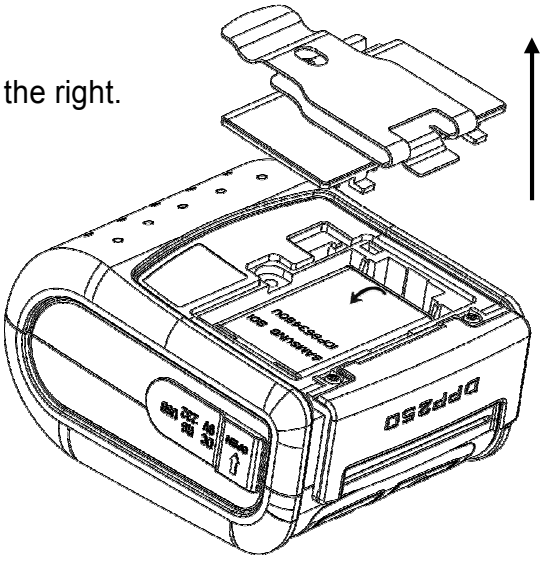
Replacing Battery

To replace the battery in the DPP-250 thermal printer follow the steps below:

1. Turn over the DPP-250 and place on a flat surface.
Rotate the locking lever as shown in the figure on the right.

2. Lift the battery cover as shown in the figure on the right.

3. Lift the battery as shown
in the figure on the right.



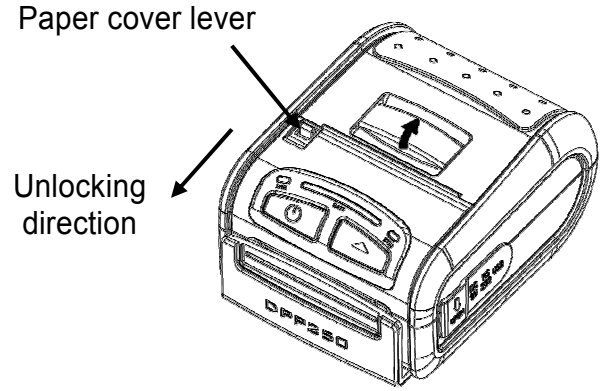
4. Detach the battery as shown in the figure on the right.

Reverse Steps **1-4** to install the new battery pack.

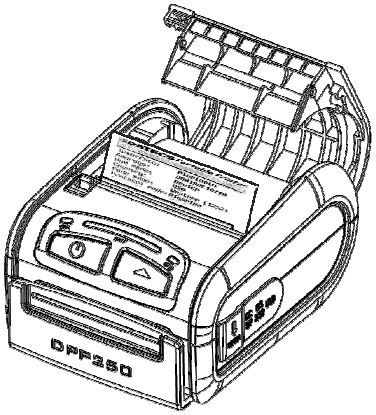
Loading Paper

DPP-250 uses a drop-and-load design making paper loading easy and trouble free. To load paper, simply lift up the paper cover latch and drop in the new roll as shown in the steps below.

1. Unlock the paper cover as shown in the figure on the right. Lift the paper cover latch to open the cover as shown in the figure on the right.

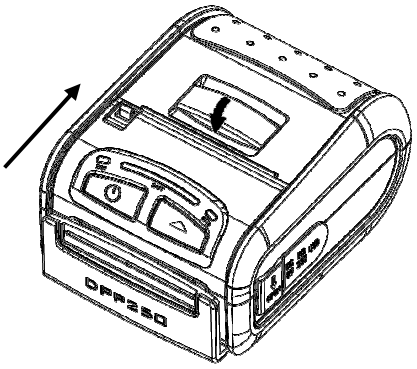


2. Drop the new roll as shown in the figure on the right.



The thermal roll must be placed as shown in the figure on the right – the thermal surface of the media must must be faced to the thermal head.

3. Close and lock the cover.



Be sure to pull at least 12 mm or more of media above the top of the printer before closing.

SELF TEST printing

Short SELF TEST

Press and Hold the **LF** button, while Power On the printer. Release – **after ~ 0.5 sec and after the 1-beep.** The printer will print a **Short Self Test**, which contains **information about:**

– Printer's model; Firmware version;

– Serial number;

– Interface;

– Black Mark mode;

– Country

– Code table

– Protocol mode;

– Intensity;

– Auto Off Time;

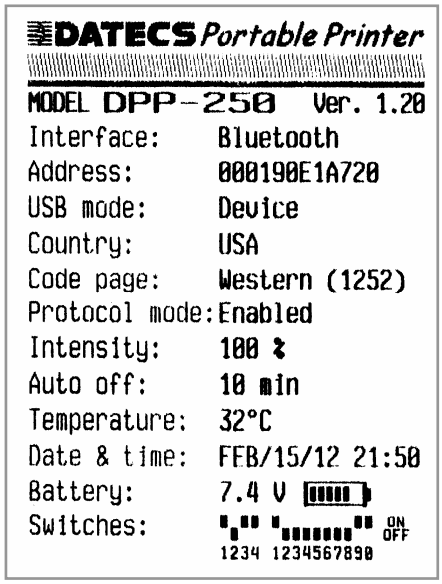
– Temperature;

– Date and Time;

– Battery;

– Switches.

The **Short SELF TEST** looks as shown below:



Long SELF TEST

Press and Hold the **LF** button, while Power On the printer. Release – **after ~ 4.5 sec and after the 3-beep.** The printer will print a **Long Self Test**, which **contains information about**:

– Rezident font sizes;

– Characters per line;

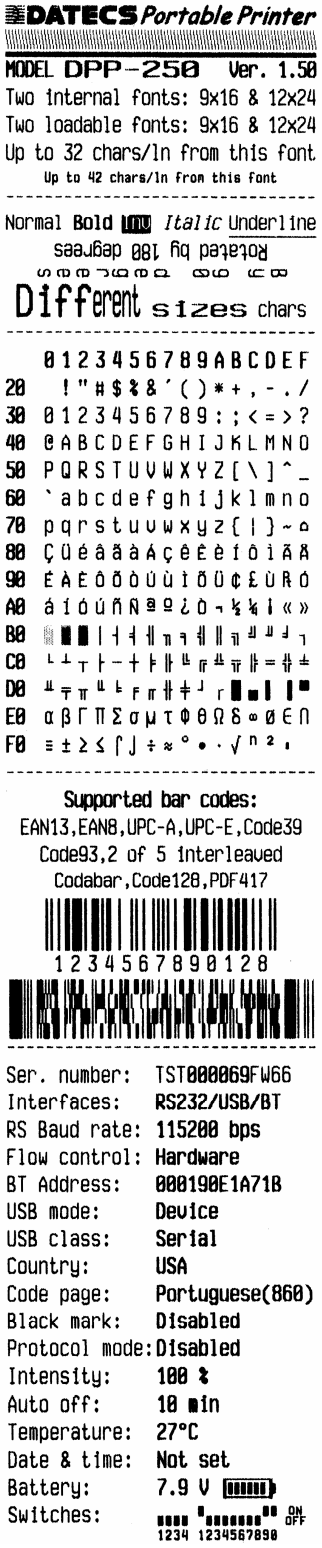
– Text formating;

– Rezident character set;

– Rezident barcode symbols;

– Printer's onfiguration

A **Long SELF TEST** is shown in the image on the right:



Troubleshooting

If you're having printing problem refer to the table below for possible causes:

№	Problem	Possible Causes
1.	Paper feeds after issuing a print job, but no printed text vizible 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.
2.	**ERR LED** blinks **RED** continuously.	Paper cover not installed properly. See section "Loading Paper" for details on replacing paper cover.
		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.	**ERR LED** flashes **green**	Battery voltage low.
6.	**ERR LED** flashes **green/red** and printer stops printing.	The printer thermal head is overheat. When the printer head temperature returns to normal the **ERR LED** light **green** and the printer continues to print.
7.	Printer stops responding to print and paper feed commands.	Remove battery for 5 seconds and reconnect battery.
8.	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.

7 List of Commands for ESC/POS Mode

DATECS DPP-250

№	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 =**	DC3 (Ruled line) commands sequence start
7	**DC3 (**	Sets the ruled line ON
8	**DC3 +**	Sets the ruled line off
9	**DC3 -**	Selects ruled line A
10	**DC3 A**	Selects ruled line B
11	**DC3 B**	Clears selected ruled line buffer
12	**DC3 C**	Sets a single dot in selected ruled line buffer
13	**DC3 D**	Ruled line pattern set
14	**DC3 F**	Ruled line line set
15	**DC3 L**	Selects ruled line combine mode
16	**DC3 M**	Ruled line 1 dot line print
17	**DC3 P**	Ruled line **n** dots line print
18	**DC3 p**	Ruled line image write
19	**DC3 v**	Canceling print data in page mode
20	**CAN**	Printing data in page mode
21	**ESC FF**	DC3 (Ruled line) commands sequence start
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 sets
27	**ESC &**	Selecting user character set
28	**ESC !**	Specifying printing mode of text data
29	**ESC ***	Printing graphical data
30	**ESC +**	Switchs 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 diraction
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**	Sellecting 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 f**	Select symbol ‘0’ printing style
68	**ESC i**	Feeding paper backwards
69	**ESC o**	Temporarily feeding paper forward
70	**ESC pair=**	Enabling/Disabling PAIRING info saving in Bluetooth mode
71	**ESC pwd=**	Programming a new Bluetooth password (PIN)
72	**ESC r**	Full command for sounding buzzer
73	**ESC s**	Reading print settings
74	**ESC u**	Selecting code table
75	**ESC v**	Transmitting the printer status
76	**ESC x**	Setting the time interval for automatically switching Off the printer
77	**ESC y BTH:**	Bluetooth module settings adjustment
78	**ESC {**	Enabling/Canceling printing of 180° turned characters
79	**GS FF**	Printing in page mode and returning to standard mode
80	**GS S**	Specifying the absolute vertical position in page mode
81	**GS)**	Setting printer flags (memory switches)
82	**GS ***	Defining a Downloaded Bit Image (logo)
83	**GS /**	Printing a Downloaded Bit Image
84	**GS :**	Starting/ending macro definitions
85	**GS B**	Enabling/Disabling inverse printing (white on black)
86	**GS C**	Read the Real Time Clock
87	**GS H**	Selecting Printing position of HRI Code
88	**GS L**	Setting the left margin
89	**GS Q**	Printing 2-D barcodes
90	**GS R**	Filling or inverting a restangle in page mode
91	**GS S**	Selecting 2-D barcode cell size
92	**GS T**	Sellecting the print direction in page mode
93	**GS U**	Selecting standard mode
94	**GS W**	Setting the print area width
95	**GS X**	Drawing a rectangular box with selected thickness in page mode
96	**GS Z**	Printing the non blank page area only in page mode
97	**GS **	Specifying the relative vertical position in page mode
98	**GS ^**	Executing macro
99	**GS c**	Setting the Real Time Clock
100	**GS f**	Setting the font of HRI characters of the barcode

101	**GS h**	Setting the height of the barcode
102	**GS k**	Printing a barcode
103	**GS p**	Settings for 2D barcode PDF417
104	**GS q**	Selecting the height of the module of 2D barcode PDF417
105	**GS w**	Selecting the horizontal size (Scale factor) of the barcode
106	**GS x**	Direct text print in page mode

Asian Languages Support

107	**FS !**	Specifying printing mode of two-byte text data
108	**FS &**	Selecting two-byte text mode (JIS or GB2312)
109	**FS -**	Selecting/Canceling underline mode for two-byte text mode
110	**FS .**	Canceling two-byte text mode
111	**FS 2**	Defining one custom Kanji character
112	**FS C**	Selecting Shift-JIS mode (Japanese version only)
113	**FS S**	Specifying character spacing for two-byte text mode
114	**FS W**	Selecting double size characters for two-byte text mode

* For details about commands for ESC/POS mode see Programmer's User.