DATECS

DPP-350

ESC/POS Thermal Printer
User's Manual

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Contents

Technical Data

Feature	Specification
Emulation	ESC/POS
Printer mechanism	FTP-638MCL103
Printing Method	Thermal-line dot method
Dot structure	576 dots per line
Dot pitch (Horizontal)	0.125 mm (8 dots/mm) - Dot density
Dot pitch (Vertical)	0.125 mm (8 dots/mm) - Line feed pitch
Effective printing area	max 72 mm
Paper Feed System	step
Printing Speed	Maximum 60mm/sec. (480 dot line/sec.) at 8.5 V
Head life	* Pulse resistance: 100 million pulses/dot (under our standard conditions). * Abrasion resistance: paper traveling distance 50km (print ratio: 25% or less)
Fonts	Font A: 12 x 24 dots, 48 characters per line
	Font B: 9 x 16 dots, 64 characters per line
	Loadable Font C: 12 x 24 dots, 48 char. per line
	Loadable Font D: 9 x 16 dots, 64 char. per line
	Font E (JIS and Shift-JIS): 24 x 24 dots, 28 characters per line - Japanese version only
	Font F (GB2312): 24 x 24 dots, 28 characters per line - Chinese version only
Logo Registration	1 Black & White BMP format (1-bit per pixel); Size: 576 x 248
Barcode printing	EAN 13, EAN 8, UPC-A, UPC-E, CODEBAR, CODE 39, CODE 128, PDF417, QR Code
FLASH Memory	1 Mega bit
RAM Memory	36 864 bytes (option 131 072 bytes)
Interfaces	RS-232 interface, type RS-232C, max 115200 bps

		USB interface, type USB v 1.1, compatible with 2.0
		Bluetooth interface (optional)
Cables		RS-232 interface cable
		mini USB A to mini USB B cable (optional)
Configuration options		Magnetic Card Reader - 3 track head, ISO7811 (optional)
		Smart Card Reader, ISO 7816-1/2/3 (optional)
		MIFARE Reader, ISO 14443-A (optional)
		SD card slot for SD card (optional)
Battery		Rechargeable Li-ion battery - 7.4 V / 2 Ah Battery capacity: Print 30 000 lines per charge
Power supply		AC adapter, model: SA110C Input: AC 100 – 240 V / 0.3 A ; 50/60 Hz Output: DC 9 V / 1 A
Power switch		ON/OFF
Operation switches		Button LF – Paper feed, Self test, Dump mode
		Button ON/OFF- Switch On and Switch OFF
Recommended Paper	Width, mm	80 or 58 / 60
	Diameter, mm	50
	Thickness, μ m	60 to 100 (some paper in this range may not be used because of paper characteristics)
Dimensions, (W x D x H) mm		108 x 111 x 62
Weight, g		400 (w/o paper) 460 (with paper)
Safety standards and EMI		"Drop" test – up to 110 cm and "Waterproof"
Operating environment	Operating temperature humidity	0°C to + 50°C 20 to 85% RH (no condensation)
	Storage temperature humidity	-20°C to + 60°C 5 to 95% RH (no condensation)

Table 1

Box Contents

Your DPP-350 comes with the following items listed below:

Item	Part Number	Descriptions	Image
1	DPP-350xx	DPP-350 Thermal printer	
2	-	AC charger	
3	-	1 Roll of thermal paper	
4	-	User's manual	
5	-	RS232 Interface cable	
6	-	Partition (2 pcs) for 58/60mm X 50mm diameter paper rolls*	

Table 2

***** With the help of 2 pcs. Partition for 58/60mm wide paper roll DPP-350 printer can be used with different width paper rolls.

1. Turn off the printer power.
2. Open the paper cover.
3. Attach the 2 pcs. "Partition" supplied with the printer to the holes in bottom of printer. By switching places of the two "Partition" can be used either 58mm or 60mm wide paper rolls
4. Referring to the section of DIP switch setting change the paper width setting to 58 mm.

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 details on using the DPP-350 Drivers & SDK, please refer to the SDK's documentation.

http://datecs.bg/support.php?cat=4&soft=1#1

Compatible Devices

The DPP-350 (Serial & USB) / DPP-350 (Bluetooth®) portable ESC/POS thermal printer is designed specifically for use with most PDA & Smartphone devices.

The DPP-350 can be used in a variety of applications where Printing / Card Reading is required.

User Notes:

Compatibility depends on the type of communication method "Serial / USB / Bluetooth®" your PDA or Smarphone supports and the availability of DPP-350 driver for your device.

- Determine the method of communications your device supports.
- Next determine if your device is supported by the DPP-350 Drivers & SDKs.

Because of the continually evolving Driver & SDK to support new mobile devices, visit our developer web site at:

http://datecs.bg/support.php?cat=4&soft=1#1

Getting Started

The DPP-350 allows you to printer information from your PDA & Smartphone. Before using the DPP-350 thermal printer the battery should be properly charged. The following Quick Start guide will help to get your DPP-350 ready for use.

Quick Start:

Steps	What to do	Purpose	Where to find more information
1	Charge the DPP-350 rechargeable battery pack as recommended in this manual.	The Lithium Ion battery pack should be fully charged before use to ensure long battery life.	Charging Battery, Page 9
2	Load DPP-350 print media (Thermal Paper)	DPP-350 requires Thermal paper for printing.	Loading Paper, Page 11
3	Setup Bluetooth Pairing.	Setup Bluetooth® pairing to allow DPP-350 to communicate with Bluetooth® devices.	Bluetooth® Setup, Page 16
4	Install DPP-350 Software	To print information from your device, software needs to be installed onto your device.	Printing software is not provided by Datecs. Please contact your DPP-350 reseller for recommendations on Third-Party solutions. Developers should refer to the section in this manual on “Developing Solutions”.

Table 3

About Your DPP-350

♦ **DPP-350 left view**

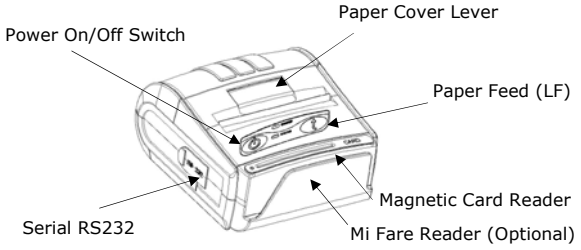


Figure 1

♦ **DPP-350 right view**

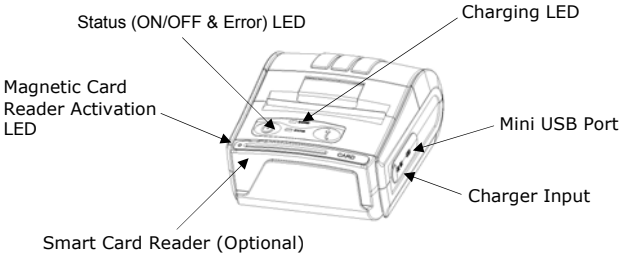


Figure 2

Charging the DPP-350

The DPP-350 uses a Lithium Ion rechargeable battery pack. Before first use, the DPP-350 battery pack should be charged for at least 4 hours.

To prevent electrical damage to the DPP-350 and/or battery pack, please use approved AC Charger only.

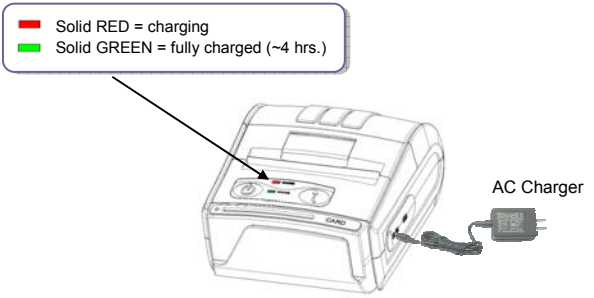


Figure 3

Status & Operating Modes

The DPP-350 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.

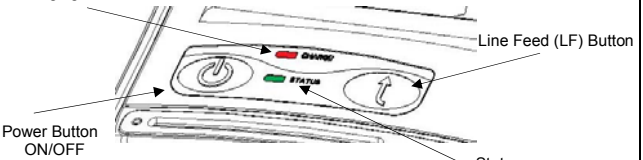


Figure 4

Printer Status		
Charging LED		Solid GREEN = Battery at full charge
		Solid RED = Battery charging
Status (ON/OFF & Error) LED		Flashing once per second = Power ON
		Flashing once per second = Error condition(s) • Low battery • No Paper • Thermal Head Overheating

Table 4

Loading Paper

The DPP-350 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. Lift the paper cover latch to unlock the paper cover as shown in the figure on the right.

igure 5

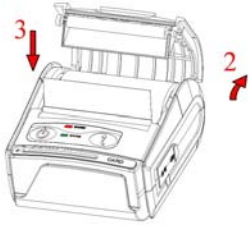


Figure 6

2. Lift the paper cover.
3. Drop in the new roll of thermal paper media as shown in the figure on the left.

   Be sure to pull at lease ½ inch or more of media above the top of the printer before closing.

Figure 7

4. Close the paper cover until it snaps lock.

Power On Self-test

The DPP350's LF switch/button is used for entering various printer modes. These modes can be used to assist developers in debugging problems related to programming and communication. The following explain how to access the various operating modes.

Step #1: Make sure the printer is OFF (On-line LED is OFF) before performing step #2.

Step #2: Press and hold the line feed button (LF). While pressing the (LF) button, press the (ON) button momentarily and release when the Status LED turns green. Release LF button after the printer Beep once. Shortly after the LF button is released the printer will print self-test.

LF Button Operation Modes		
Short Push	**N/A**	Paper feed
Push and Hold - release after the number of beeps	**1 - beep**	Self-test print
	2 - beeps	Hex Dump mode
	3 - beeps	Long-test print
	4 - beeps	Program mode

Table 5

Note: Care must be taken when entering operating modes to prevent the clearing of factory preset configuration information.

Self-test

The DPP-350 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.

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

Figure 8

Dip Switch Settings

The DPP-350 is designed to use different methods of communications. Care must be taken to ensure that the DIP Switches are not changed from its default factory configuration unless required.

♦ **DIP SWITCH SETTINGS:**

The printer has two absolutely different operation modes.

They are determined by the state of switch Sw2:

- OFF ESC/POS mode
- ON Hex Dump mode

Switch	OFF	ON
Sw1	Wide paper roll (78 mm)	Thinner paper roll (58 mm)
Sw2	ESC/POS mode	Hex Dump mode
Sw3	Hardware protocol	Xon/Xoff protocol
Sw4	Normal operation mode	Protocol mode

Table 6

DIP Switch Location

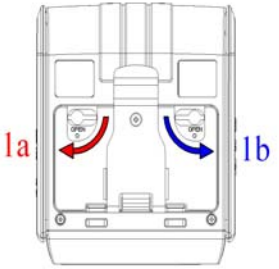


Figure 9

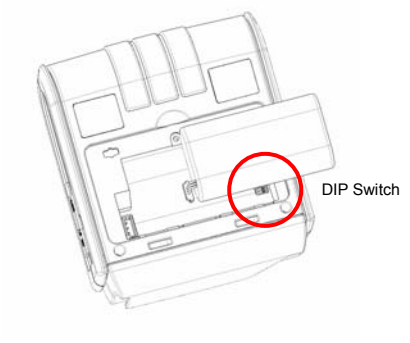


Figure 10

Printer Configuration

The DPP-350 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
POWER OFF TIME	10 minutes
PRINT DENSITY	100%
CHARACTER TABLE	WESTERN (1252)

Table 7

Step #1: Make sure the printer is OFF (On-line LED is OFF) before performing step #2.

Step #2: Press and hold the Power (ON) button. The Status LED flashes Green and after about 4 seconds holding the Power button the Status LED flashes Red and then turns Red. Release the button and wait for the printer to print out the current memory switch settings and instructions. Follow the printed instructions to make the necessary changes.

Note: Care must be taken when changing factory preset configuration information.

Setting Memory Switch

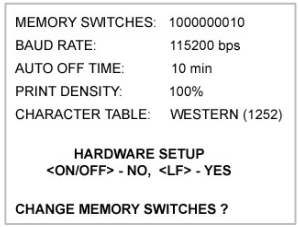
- **MEMORY SWITCH SETTINGS:**

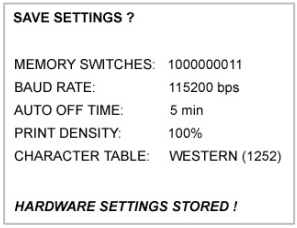
Step #1: Make sure the printer is OFF (STATUS LED is OFF) before performing step #2.

Step #2: Press and hold the Power (ON) button. The Status LED flashes Green and after about 4 seconds holding the Power button the Status LED flashes Red and then turns solid Red.

Step #3: Release the button and wait for the printer to print out the current memory switch settings and instructions. Follow the printed instructions to make the necessary changes.

Note: Care must be taken when changing factory preset configuration information.





Memory Switch Details

SW1 ENABLE SOUND ?
SW2 EXECUTE <CR> AS <LF> ?
SW3 DISABLE <CR> COMMAND ?
SW4 N/A
SW5 N/A
SW6 N/A
SW7 N/A
SW8 DISABLE DISCOVERABELITY ?
SW9 ENABLE USB INTERFACE ?
SW10 USB IN DEVICE MODE ?

CHANGE BAUD RATE ?
CHANGE AUTO OFF TIME ?
CHANGE PRINT DENSITY ?
CHANGE CHARACTER TABLE ?
CHANGE PAIRING INFO ?

SAVE SETTINGS ?

- **SW1:** Enable/Disable buzzer.
- **SW2:** Execute <CR> Carriage Return as <LF> Line Feed.
- **SW3:** Disable <LF> Line Feed command.
- **SW4-7:** Reserved for future features.
- **SW8:** Prevents others from discovering printer when set to ENABLE. Must be set after pairing is completed.
- **SW9:** Allow the use of USB port for communications.
- **SW10: (OFF)** set USB as the host mode.

Pairing Info Details

- **BAUD RATE:** Default is 115200
- **AUTO OFF TIME:** Default is 5 minutes
- **PRINT DENSITY:** Default is 100%
- **CHARACTER TABLE:** Default is WESTERN (1252)
- **PAIRING INFO:** DEFAULT is (SAVE = No)

Notes:

When saving pairing information, the printer remembers 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".

Saving Pairing Info:

1. Following instruction on page-17, change the Pairing Info option to [**Save = Yes**].
2. Turn the printer on and pair the printer to your Bluetooth device.
3. The printer will now remember the pairing information and not prompt user for a passkey on every printer initialization.

Clearing Pairing Info:

1. Following instruction on page-17, 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.

Communication Configuration

The following standard configurations should be used for the different communication methods.

- **Communication with PDA device**
- **Via Bluetooth/ USB/ Serial:**

Memory Switch Options	
Memory Switch (1 thru 10) (see page 16, 17, 18)	*******010
Physical Switch Options	
DIP Switch (1, 2, 3 ,4) (see page 14)	*, OFF, OFF, **ON**

Table 8

- **Communication with PC (using windows printer driver)**
- **Via Bluetooth/ USB./ Serial:**

Memory Switch Options	
Memory Switch (1 thru 10) (see page 16, 17, 18)	*******011
Physical Switch Options	
DIP Switch (1, 2, 3 ,4) (see page 14)	*, OFF, OFF, **OFF**

Table 9

- **Service mode (changing printer settings, loading firmware) communication with PC**
- **Via Serial**

Memory Switch Options	
Memory Switch (1 thru 10) (see page 16, 17, 18)	*******011
Physical Switch Options	
DIP Switch (1, 2, 3 ,4) (see page 14)	*, OFF, *, **ON**

Table 10

* - depending on user requirements can be 1 or 0

Notes: When not using Driver/SDK developer tools, set DIP Switch 4 to OFF.

Connecting Device

The DPP-350 is designed to use different methods of communications. Care must be taken to ensure that the DPP-350 USB or Serial connector and PDA & Smartphone connector are not accidentally damaged. The figures below show how to attach the different device to the DPP-350.

- **Serial / USB (Cabled) Version:**

  - Connect the DPP-350 using Mini USB or Serial cable is shown in the figure below.

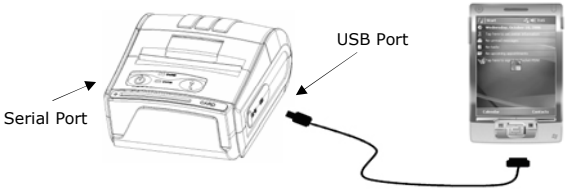


Figure 11

- **BLUETOOTH® (Wireless) Version:**

  - The DPP-350 Bluetooth® version uses Bluetooth® wireless technology to connect to Bluetooth® enable devices. See page 19 for details on Bluetooth® setup.

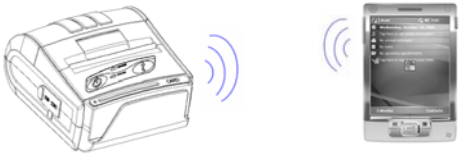


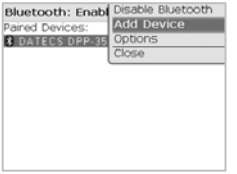
Figure 12

Bluetooth® Setup

Adding New Bluetooth® Device to PDA or Smartphones

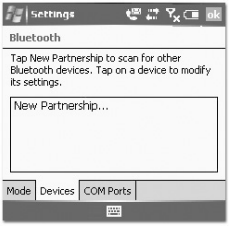
The following is a brief explanation on how to [**Pair**] your Bluetooth® DPP-350 to PDA & Smartphones.

BlackBerry Devices:



Add Device or Pairing Bluetooth® peripherals to BlackBerry devices require the use of the device Bluetooth® manager. Image on the right shows a typical Blackberry Bluetooth® manager. When adding / pairing the DPP-350, use the [**0000**] pairing key when prompted.

Windows Mobile Devices:



Creating a *New Partnership* or Pairing Bluetooth® peripherals to your Windows Mobile devices require the use of the device Bluetooth® manager. Image on the right shows a typical Windows Mobile Bluetooth® manager. When adding / pairing the DPP-350, use the [**0000**] pairing key when prompted.

Palm Devices:

Add Device or Pairing Bluetooth® peripherals to your Palm devices require the use of the device Bluetooth® manager. Image on the right shows a typical Palm Bluetooth® manager. When adding / pairing the DPP-350, use the [**0000**] pairing key when prompted.

Loading Drivers

Loading DPP-350 drivers for you're PDA or Smartphones.

BlackBerry Devices:

Blackberry Desktop Manager shown in the figure on the right is used to load third party software on to 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 shown in the figure on the right is used to install third party applications on to your mobile 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 cases you only need to run the DPP-350 installer to start the installation.

Palm Devices:

Palm Install Manager Application shown in the figure on the right is used to install third party applications on to 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 cases you only need to drag & drop DPP-350 PRC files in installer and click Add.

Magnetic Card Reader (MS Version)

The DPP-350 has 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.

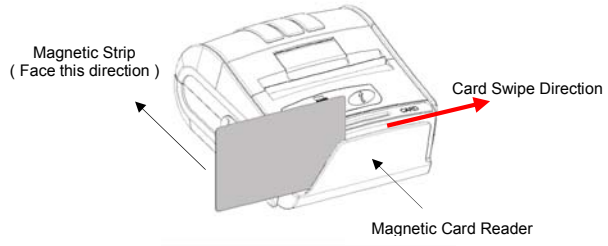


Figure 13

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.

User Notes:

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

Smart Card Reader (SC Version)

The DPP-350 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.

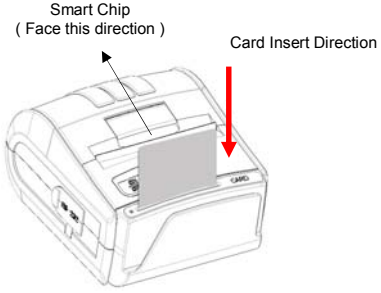


Figure 14

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 until the card stops.

User Notes:

To use the smart card reader feature, special software must be used to read and process the smart chip information. Please consult your reseller if this software is available or contact DATECS for recommendations on compatible third party software solutions.

MIFARE Reader (MF Version)

The DPP-350 has a built-in MIFARE reader (optional). The MIFARE reader is designed to read information stored embedded on MIFARE contactless cards or tags and process the information using device side software.

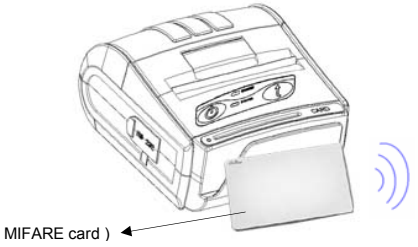


Figure 15

Place the MIFARE card close to the printer facing the front of the printer as shown in the figure above.

User Notes:

To use the MIFARE reader feature, special software must be used to read and process the card information. Please consult your reseller if this software is available or contact DATECS for recommendations on compatible third party software solutions.

Replacing Battery

To replace the battery in the DPP-350 thermal printer follow the steps below.

Steps:

1. Turn over the DPP-350 and place on a flat surface. Rotate the (2) locking levers as shown in the figure on the right.

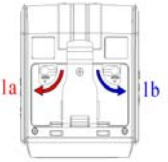


Figure 16

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

Figure 17

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

Figure 18

4. Detach the battery connector as shown in the figure on the right. Reverse Steps 1-4 to install the new battery pack.

Figure 19

Developing Solution

Integrating the DPP-350 into your mobile solution requires the use of the DPP-350 PDA & Smartphone SDK. The SDK incorporates API specific to developing printing applications and using the integrated Magnetic Card Reader / Smart Card Reader / MIFARE Reader capability of the DPP-350.

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

OS	Language	SDK - IDE
BlackBerry	Java	RIM BlackBerry Java JDE 4.1 and higher
Palm One	C ++	Code Warrior
	Basic	Satellite Forms
	Basic	NS Basic
Windows Mobile	VB.Net	Microsoft Visual Studio 2005 (.Net)
	C ++	Microsoft Visual Studio 2005 (.Net)
	C Sharp	Microsoft Visual Studio 2005 (.Net)

Table 13

For details on using the DPP-350 SDK, please refer to the SDK's documentation.

Troubleshooting

If you're having printing problem 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	On-line LED blinks RED continuously.	Battery voltage low.
		Printer out of paper or Paper not properly loaded. See section "Loading Paper" for details on loading paper.
3	Strange characters are printed when printing.	Battery voltage low. See section on charging battery pack.
4	On-line LED always flashing RED	Battery voltage low, Paper empty or other error occurred. See section on charging battery pack or loading paper.
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.

Table 14

List of commands for ESC/POS mode

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	**DC3 A**	Selects ruled line A
11	**DC3 B**	Selects ruled line B
12	**DC3 C**	Clears selected ruled line buffer
13	**DC3 D**	Sets a single dot in selected ruled line buffer
14	**DC3 F**	Ruled line pattern set
15	**DC3 L**	Ruled line 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 sets
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	**ESC {**	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

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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