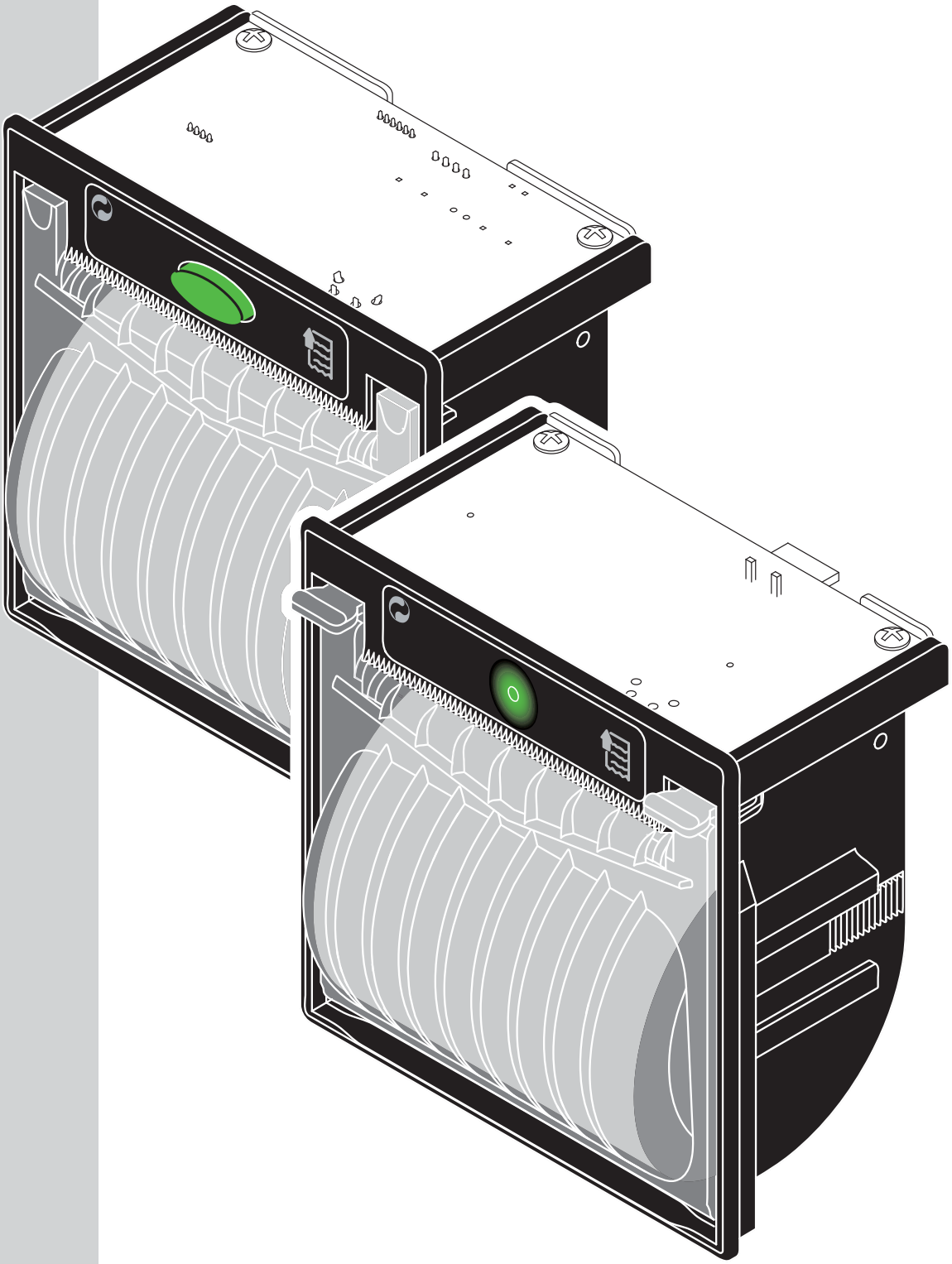
PLUS II

USER MANUAL

OEM



Command Reference: **DOMC-0009e**

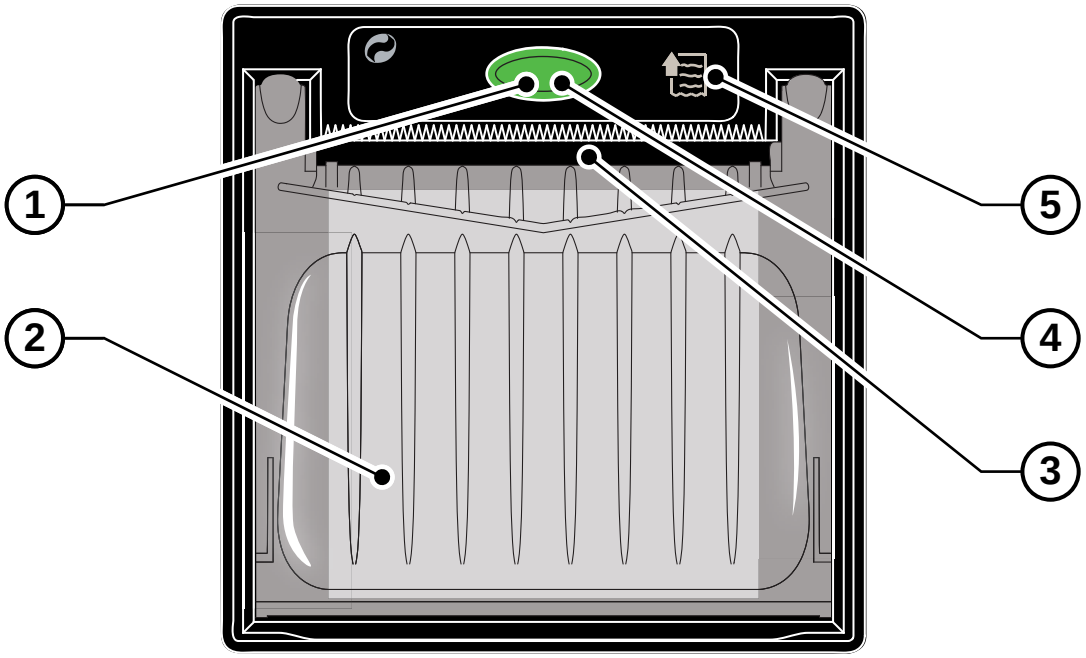
CUSTOM ENGINEERING S.p.A.
Str. Berettine 2 - 43010 Fontevivo (PARMA) - Italy
Tel.: +39 0521-680111 - Fax: +39 0521-610701
http: www.custom.biz

Customer Service Department:
Tel.: +39 059 88 69 587
Email: support@custom.it

PRINTER COMPONENTS

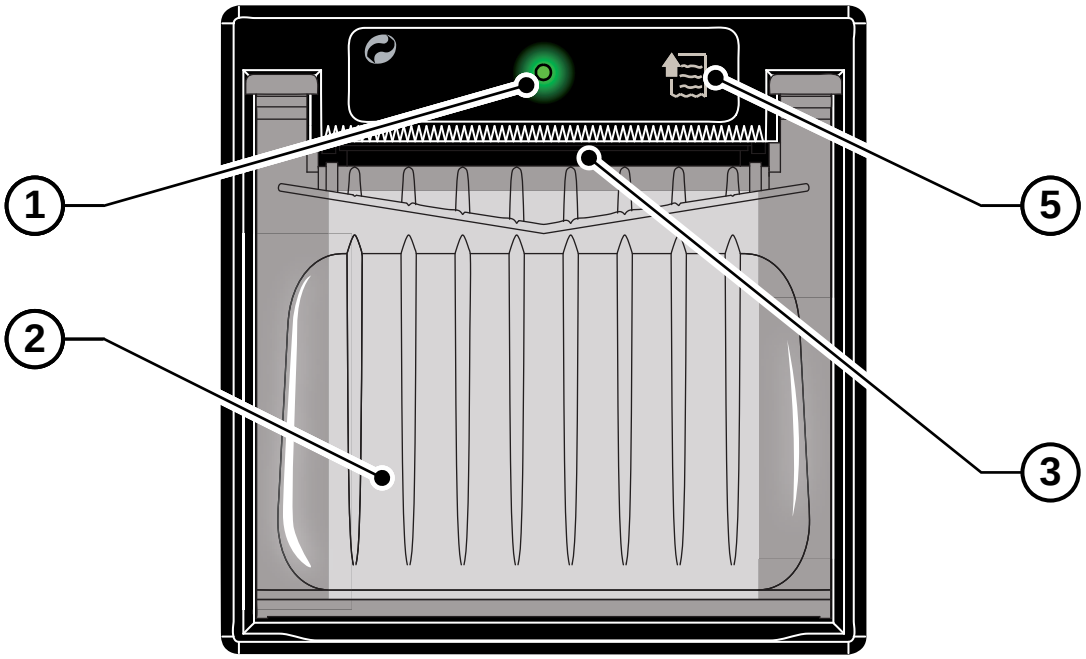
A. PLUS II - Front view

1 - STATUS Led
2 - Paper roll compartment
3 - Paper mouth
4 - OPEN key
5 - FEED key



(Fig.1)

PLUS II

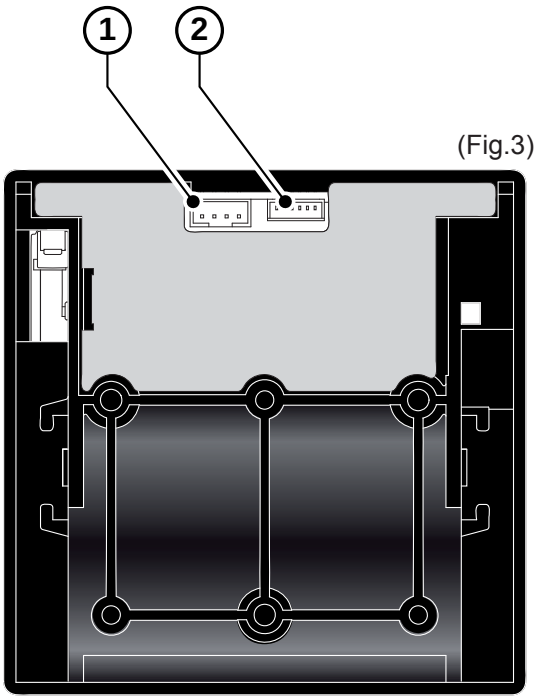


(Fig.2)

PLUS II (OPTION -0128)

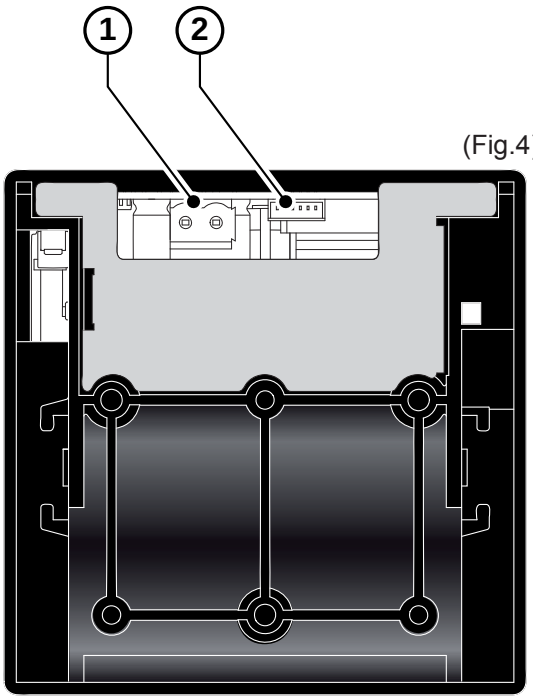
B. PLUS II - Rear view

1 - Power supply connector
2 - RS232 / TTL serial interface connector
3 - CENTRONICS / TTL parallel interface connector
4 - USB interface connector
5 - RS232 serial interface connector (1)



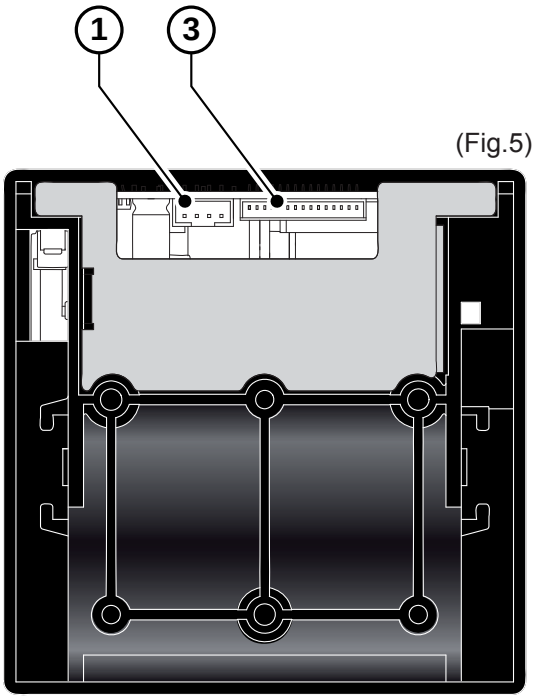
(Fig.3)

PLUS II-S / PLUS II-T



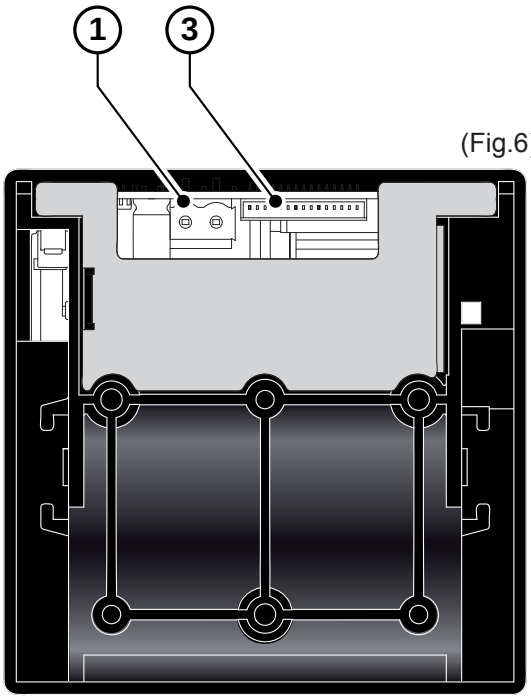
(Fig.4)

PLUS II-S-0004



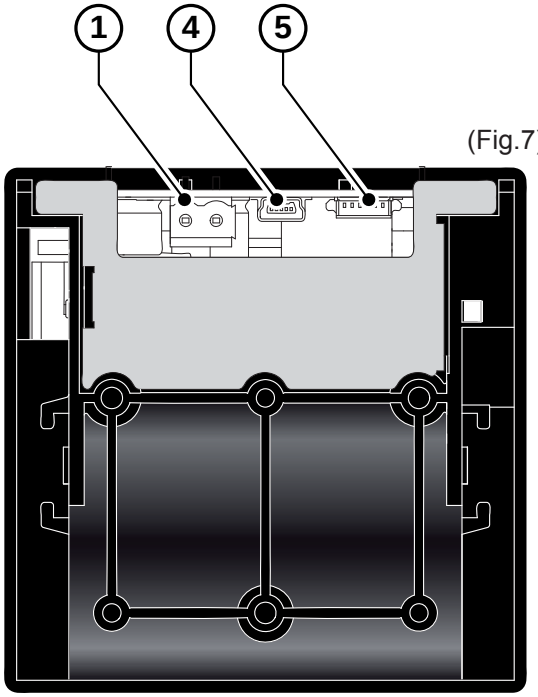
(Fig.5)

PLUS II-C / PLUS II-P



(Fig.6)

PLUS II-C-0004



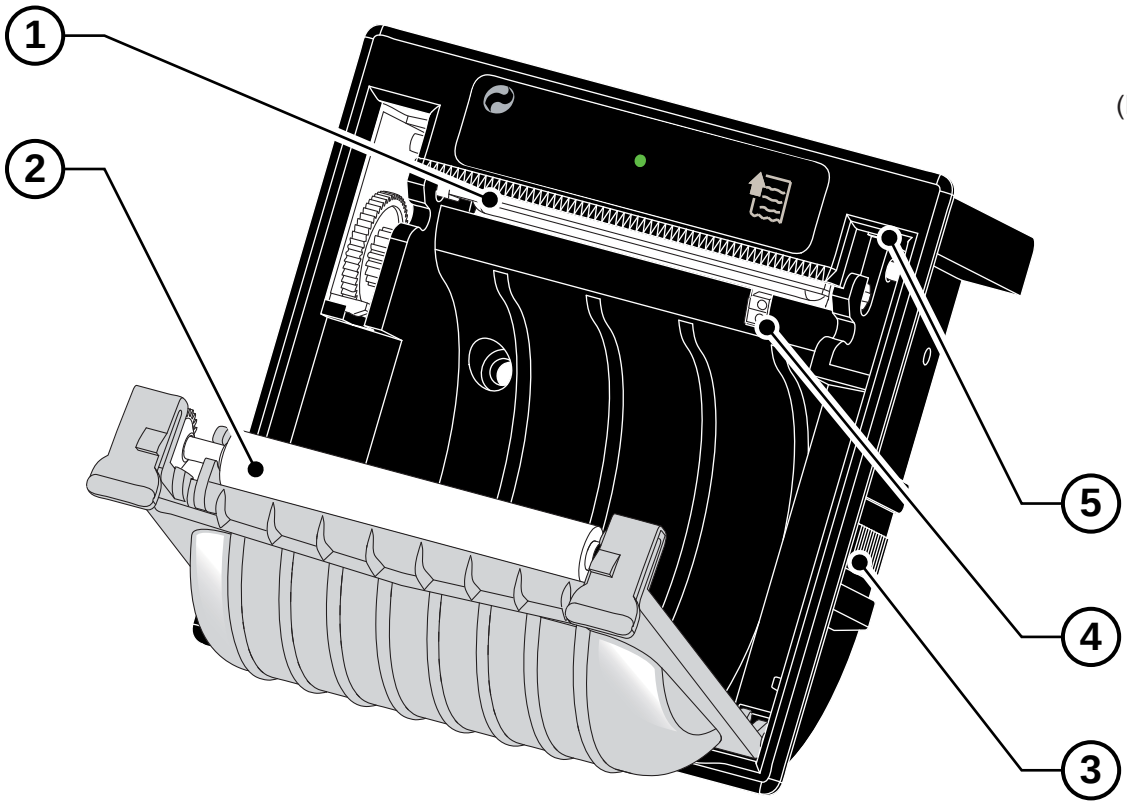
(Fig.7)

PLUS II-USB

NOTE [1] **:** RESERVED interface, only for service use.

C. PLUS II - Internal view

1 - Printing head
2 - Rubbed roller
3 - Seat for fixing hook (provided in the package)
4 - Paper presence sensor
5 - Cover open sensor (optional)



(Fig.8)

NOTE : The description of the internal components is valid for all the PLUS II models.

MANUAL CONTENTS

In addition to the Introduction which includes a description of the explanatory notes used in the manual, general safety information, how to unpack the printer and a brief description of the printer including its basic features, this manual is organized as follows:

Chapter 1: Contains the information required for correct printer installation and its proper use
Chapter 2: Contains information on interface specifications
Chapter 3: Contains technical specifications of the printer
Chapter 4: Contains the character sets (fonts) used by the printer

EXPLANATORY NOTES USED IN THIS MANUAL

N.B.
Gives important information or suggestions relative to the use of the printer.

WARNING
Information marked with this symbol must be carefully followed to guard against damaging the printer.

DANGER
Information marked with this symbol must be carefully followed to guard against operator injury or damage.

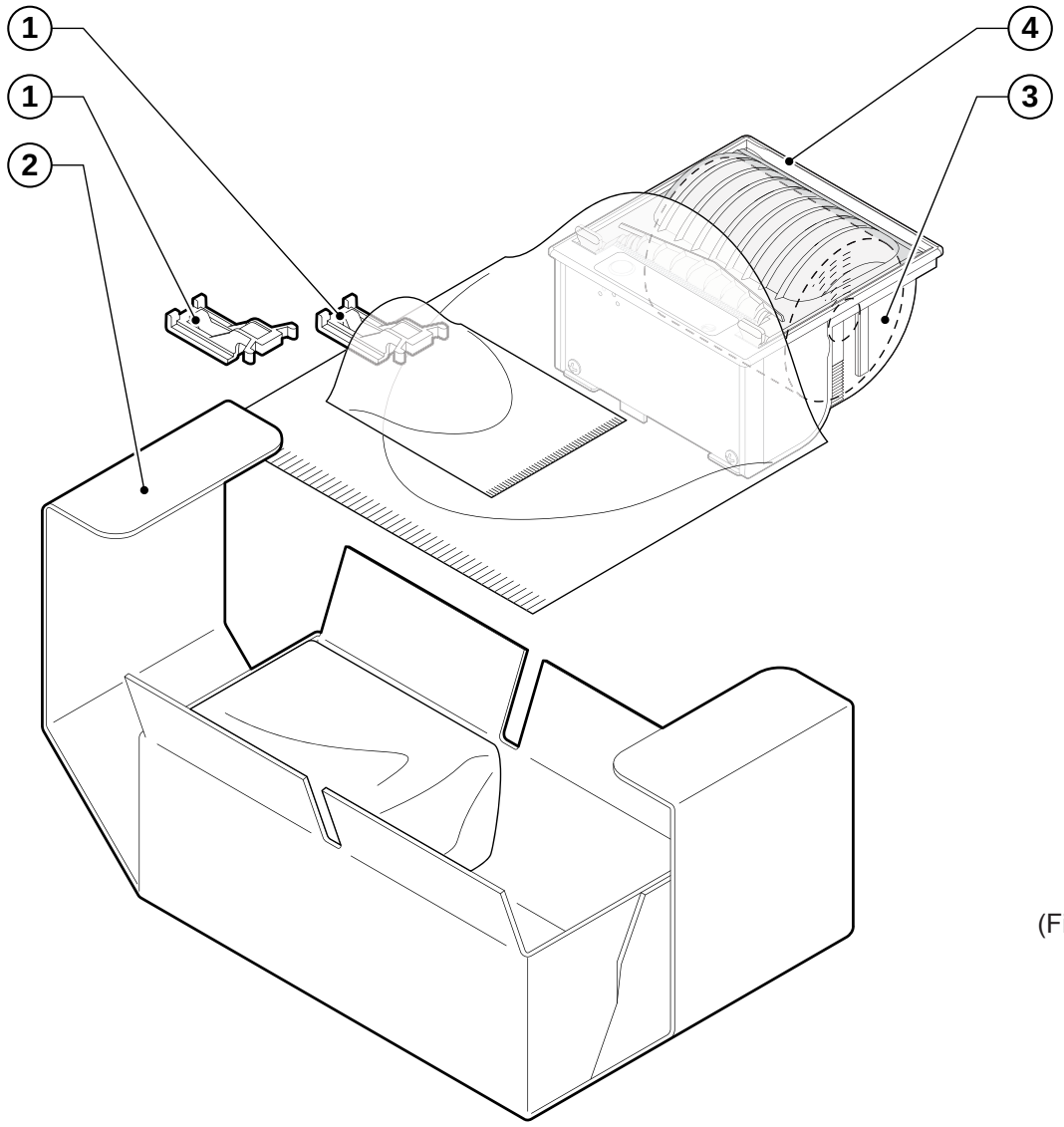
GENERAL SAFETY INFORMATION

- Read and keep the instructions which follow.
- Follow all warnings and instructions indicated on the printer.
- Before cleaning the printer, disconnect the power supply.
- Clean the printer with a damp cloth. Do not use liquid or spray products.
- Do not operate the printer near water.
- Do not use the printer on unstable surfaces that might cause it to fall and be seriously damaged.
- During the integration of the printer, we strongly warn to keep an adeguate paper loop outlet underneath the presenter, in order to allow the receipt being properly printed out.
- Only use the printer on hard surfaces and in environments that guarantee proper ventilation.
- Make sure the printer is placed in such a way as to avoid damage to its wiring.
- Use the type of electrical power supply indicated on the printer label. If in doubt, contact your retailer.
- Do not block the ventilation openings.
- Do not introduce foreign objects of any kind into the printer as this could cause a short circuit or damage parts that could jeopardize printer functioning.
- Do not spill liquids onto the printer.
- Do not carry out technical operations on the printer, with the exception of the scheduled maintenance procedures specifically indicated in the user manual.
- Disconnect the printer from the electricity supply and have it repaired by a specialized technician when:
  - A. The feed connector has been damaged.
  - B. Liquid has seeped inside the printer.
  - C. The printer has been exposed to rain or water.
  - D. The printer is not functioning normally despite the fact that all instructions in the users manual have been followed.
  - E. The printer has been dropped and its outer casing damaged.
  - F. Printer performance is poor.
  - G. The printer is not functioning.

UNPACKING THE PRINTER

Remove the printer from its carton being careful not to damage the packing material so that it may be re-used if the printer is to be transported in the future. Make sure that all the components illustrated below are present and that there are no signs of damage. If there are, contact Customer Service.

1. Fixing hooks
2. Box
3. Paper roll *(inside the printer)*
4. Printer



(Fig.1)

- Open the printer packaging
- Take out the fixing hooks and remove it from its plastic covering
- Take out the printer and remove it from its plastic covering
- Keep the box packing materials in the event the printer must be transported/shipped in the future

GENERAL FEATURES

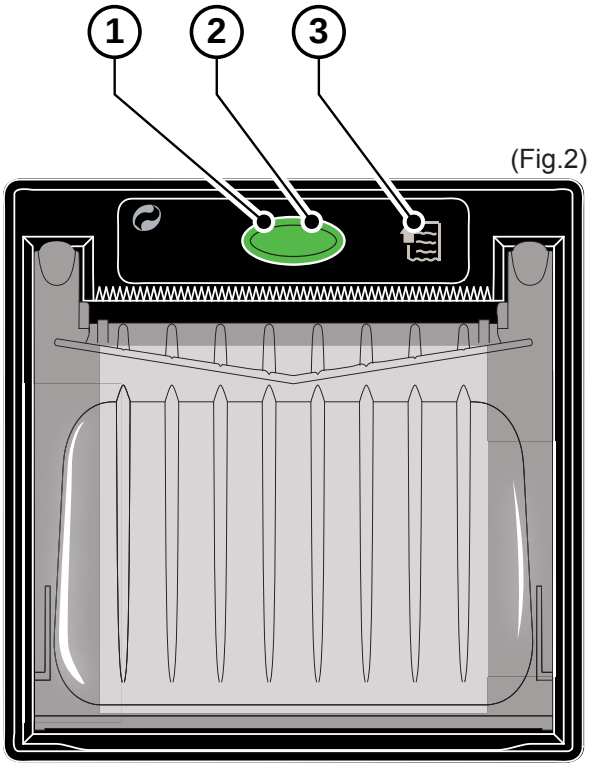
PLUS II is the new ultra-compact thermal panel printer, paper width 57,5 mm, with “SIXLOAD” easy paper loading system. PLUS II is performing and versatile, able to satisfy any printing requirements for industrial automation and garage equipment. In particular, PLUS II is suitable for measurement instrument applications, analysis and check, weighing systems, gas analyser, anti-theft devices, autoclaves, Pos.
PLUS II is provided with the innovative fixing system “EASYLOCK”: this system allows to fit the printer to any panel thickness. Moreover PLUS II can be equipped with a plastic surround which makes mechanically compatible with CUSTOM F and P series panel printers.

PLUS II is available with serial RS232/TTL interface, parallel Centronics/TTL, USB and paper sensor. It’s equipped with a 204 dpi thermal printing mechanism, using 57,5 mm-wide paper rolls. It can print 24, 32, 40 or 42 characters per line according to the printer’s model and to the selection made at the Setup stage or through a software command. Printer manage LINERLESS paper.

PRINTER DESCRIPTION

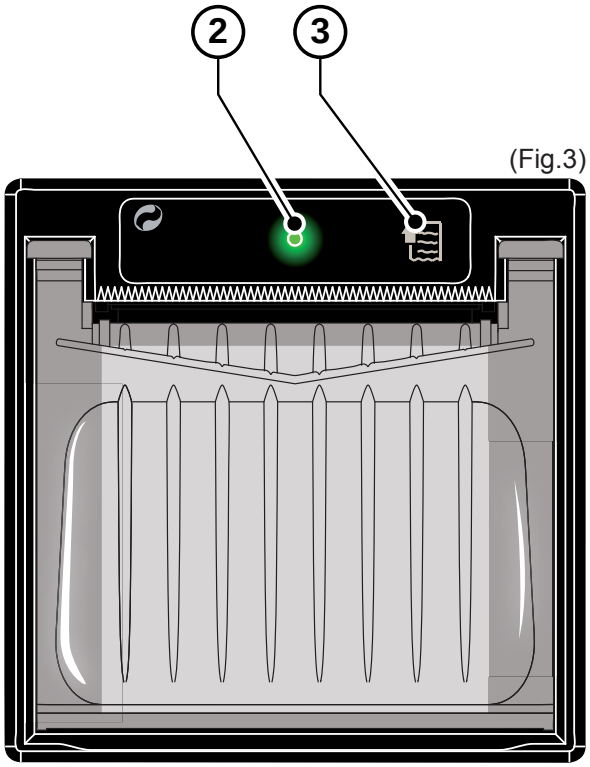
The printer has an ABS casing with a front cover which opens to allow access to the paper roll and print head. The control panel is located on the front (see fig.2) and has a FEED key (3) and an OPEN key (1) for paper roll compartment opening. The OPEN key is made of transparent plastic material so it works also a STATUS Led (2).

In the PLUS II model with the OPTION -0128, the OPEN key is not present because the front panel is opened by the two plastic hooks (see fig.3).



(Fig.2)

PLUS II

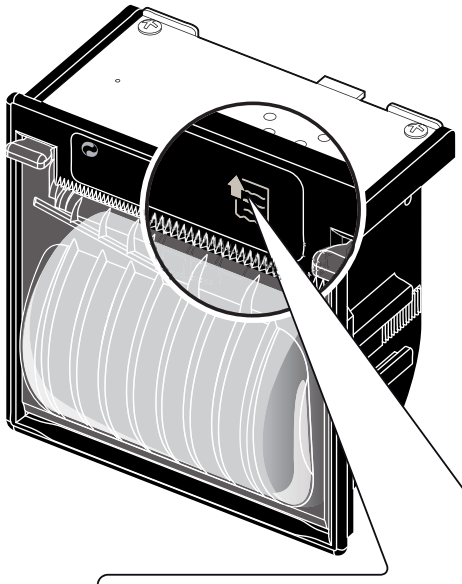


(Fig.3)

PLUS II (OPTION -0128)

• FEED key — When the LINE FEED key is pressed (see fig.4), the printer advances the paper. During power-up, if the FEED key is held down, the printer enters the SETUP routine and print the SETUP report. The printer will remain in standby in Hexadecimal dump mode until another key is pressed or characters are received through the printer communication port; for every 10 characters received it prints hexadecimal values and ASCII codes (if the characters appear underlined, it means the receive buffer is full); See Hexadecimal Dump.

• OPEN key — Press the OPEN key to open the paper roll compartment.



(Fig.4)

	< 500 msec FAST PUSH	> 500 msec PUSH
PRINT SETUP REPORT	–	ON +
SKIP SETUP		–
ENTER SETUP	–	
Modify parameter		–
Next parameter	–	
FEED		

The FEED key functions are valid for all the PLUS II models.

• STATUS led displays printer hardware status. In case of malfunction, the flash frequency changes as shown in Tab.1 for models with USB interface and in Tab.2 for all the other models.

(Tab.1)

STATUS LED	COLOUR	DESCRIPTION	
○	OFF	Printer OFF	
●	GREEN	Printer ON: no error	
☀	GREEN	COMMUNICATION STATUS	
		Nr. flashings	Description
		x 2	Heading over temperature
		x 3	Paper end
		x 4	Power supply voltage incorrect
		x 5	Reception errors (parity, frame error, overrun error)
		x 6	Misinterpret command
		x 7	Command reception time out
		x 8	Paper roll compartment open (1)

NOTE (1) : Only for models with optional cover open sensor.

(Tab.2)

STATUS LED	COLOUR	DESCRIPTION	
○	OFF	Printer OFF	
●	GREEN	Printer ON: no error	
☀	GREEN	COMMUNICATION STATUS	
		Flashings	Description
		Slow	Paper end
		Fast	Heading over temperature or power supply voltage incorrect

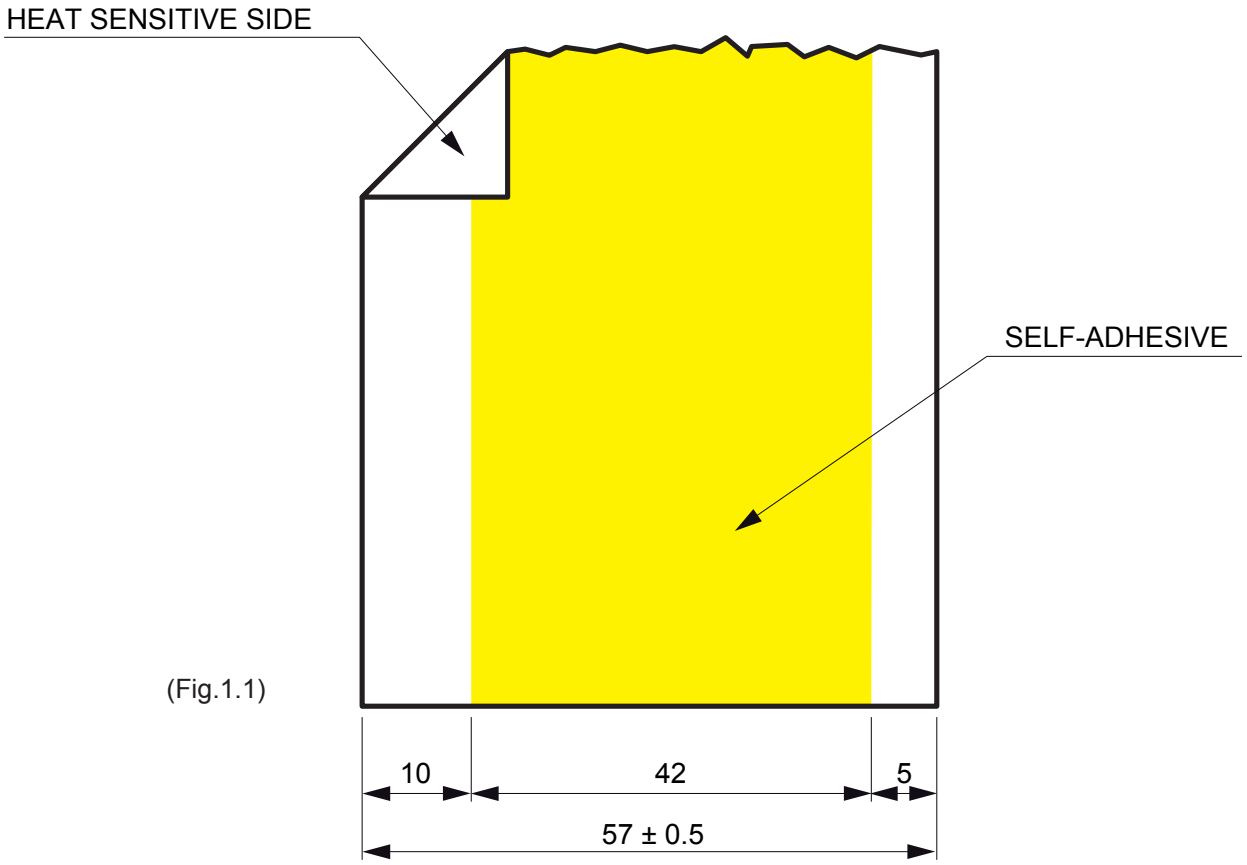
Blank page

1.1 PAPER SPECIFICATIONS

Printer manage thermal roll (heat-sensitive side on outside of roll) or LINERLESS paper (see paragraph 1.1.1).

1.1.1 Specifications for LINERLESS paper

LINERLESS paper is a thermal paper with a self-adhesive layer without liner (on non heat-sensitive side). For the better use with the printer the self-adhesive area must comply with the following dimensions (see fig. 1.1):



(Fig.1.1)

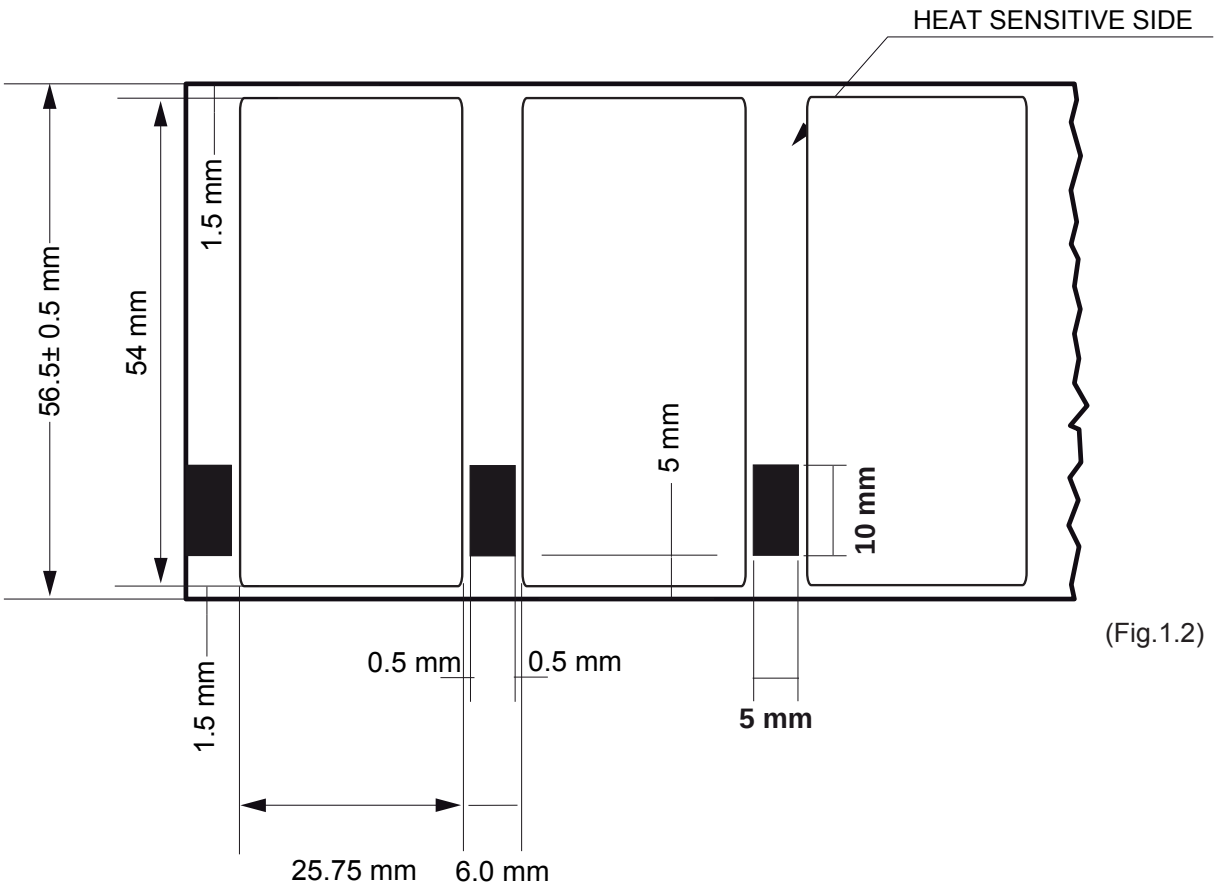
LINERLESS PAPER SPECIFICATIONS	
Self-adhesive	Water based acrylic
Self-adhesive mass	Permanent 16 gr/m^2 ±2gr
Total thickness	93 µm ±2 µm
Total weight	96 gr/m^2 ±2gr
Recommended temperature	
Stick	from +15°C to +40°C
Storage	from +10°C to +40°C
Resistance after stick	from -10°C to +50°C

WARNING
Do not set “Printer Density” parameter on “Linerless” mode during the printer SETUP (see par.1.8) with common thermal paper!

ATTENZIONE
In “Linerless” mode, if the printer is turned off a few hours, the first row of the press could be compressed, during the turning on. It is recommended to perform one or more paper FEED before printing.

1.1.2 Specifications for label roll paper

Paper roll with alignment notch is permitted. To guarantee proper alignment, the “Notch Align.” parameter must be set to “Enable” during the SETUP procedure (see par.1.8).
The black notch must be placed on the heat-sensitive side of the ticket (printable area).
For the better use with the printer the label must comply with the following dimensions (see fig. 1.2):

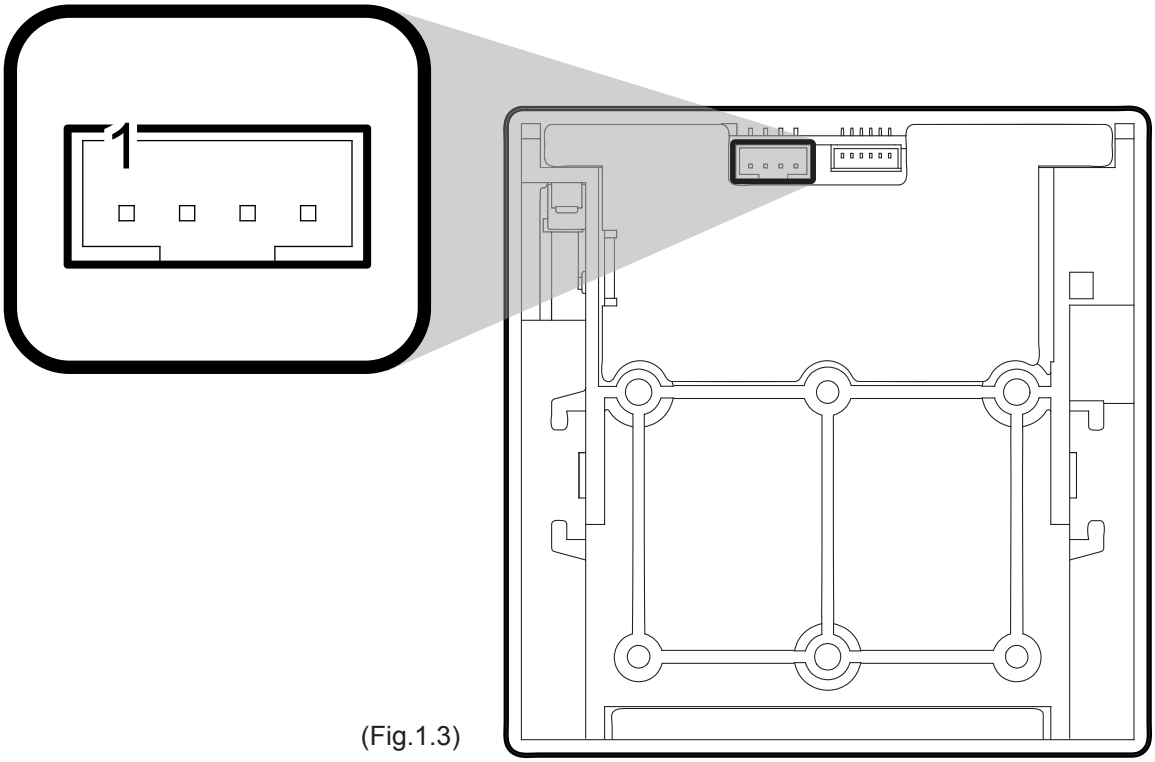


(Fig.1.2)

1.2 CONNECTIONS OF PLUS II-S AND PLUS II-T

1.2.1 Power supply

The printer is equipped with a 4 pin JST male connector (90°) for the power supply. The signals on the connector pins are as follows:



(Fig.1.3)

Model no. type:

Header: S4B-PH-K-S 90° (JST)
Housing: PHR-4 (JST) or equivalent

PIN	SIGNAL	DESCRIPTION
1	GND	Ground signal
2	GND	Ground signal
3	+Vin*	Head voltage
4	+Vcc*	Logic supply voltage

NOTE
(*) For the electrical specifications see Chapter 3.

WARNING
Respect the polarity of the power supply.

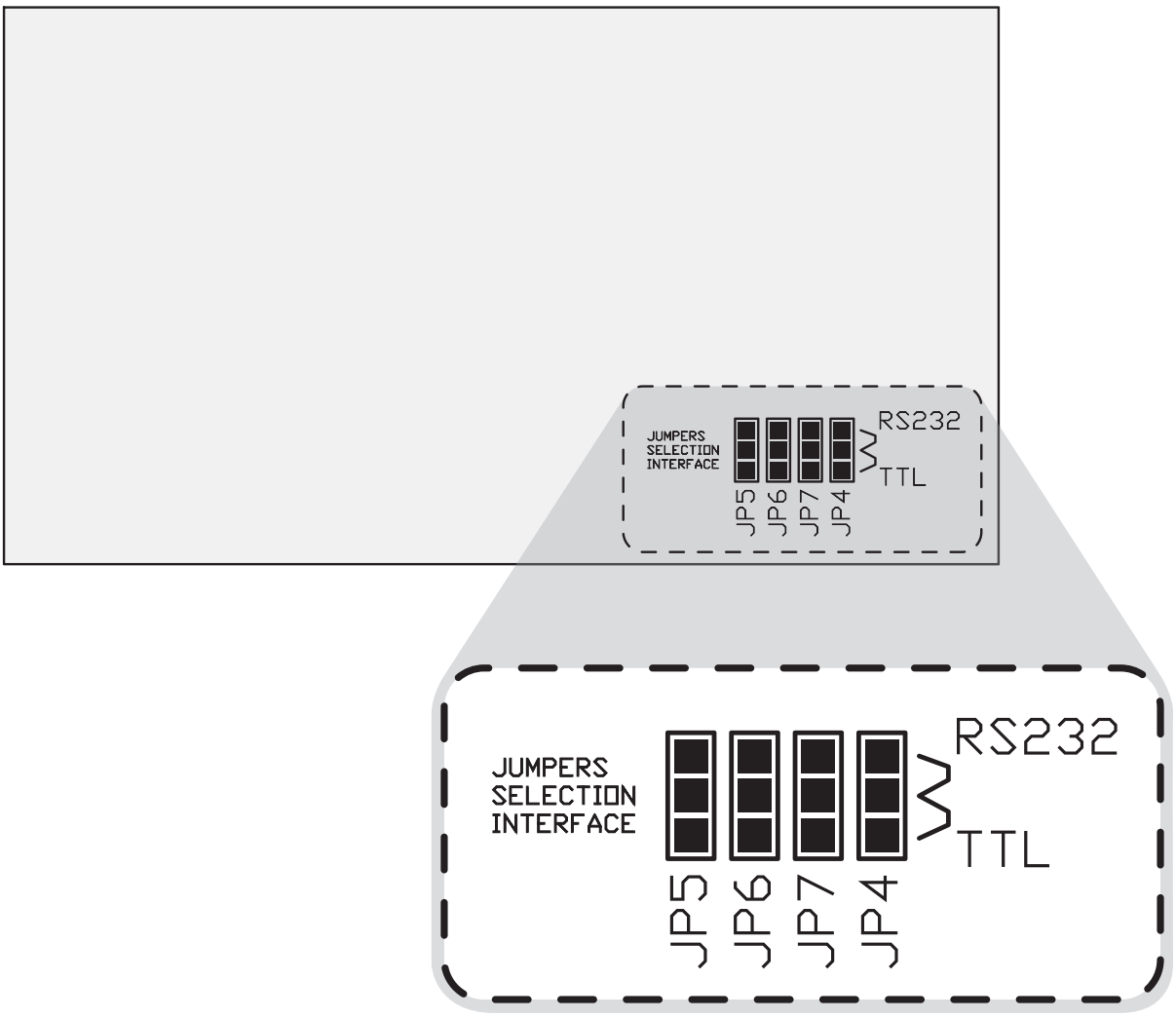
1.2.2 Setting serial interface

The JP4, JP5, JP6 and JP7 jumpers on controller board (see Fig.1.4) manages the setting of serial interface as indicated:

SERIAL	JP4	JP5	JP6	JP7
RS232				
TTL				

Refer to Fig.1.4 for the jumpers position.

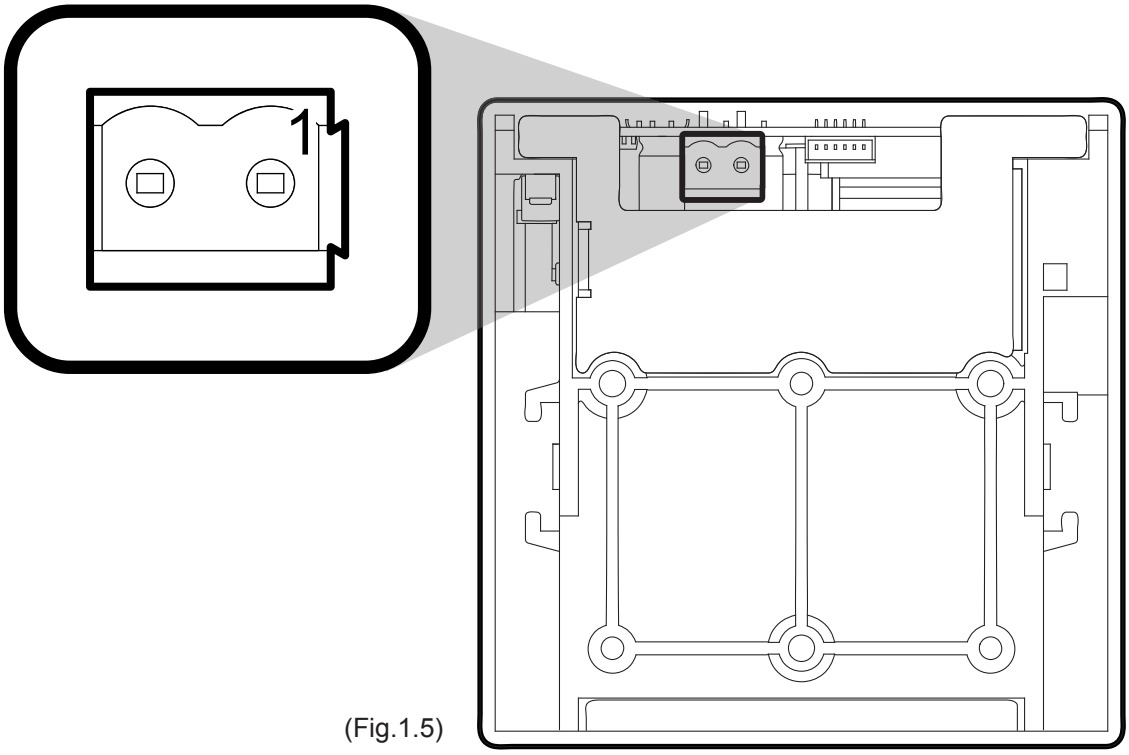
(Fig.1.4)



1.3 CONNECTIONS OF PLUS II-S-0004

1.3.1 Power supply

The printer is equipped with a 2 pin male connector terminal block (90°) for the power supply. The signals on the connector pins are as follows:



(Fig.1.5)

Model no. type:

Header: 90° Terminal block (pitch 5.08mm)
Housing: Terminal block (AWG 20-14)

PIN	SIGNAL	DESCRIPTION
1	GND	Ground signal
2	+Vin*	Logic supply voltage

NOTE
(*) For the electrical specifications see Chapter 3.

WARNING
Respect the polarity of the power supply.

1.3.2 Setting serial interface

See paragraph 1.2.2.

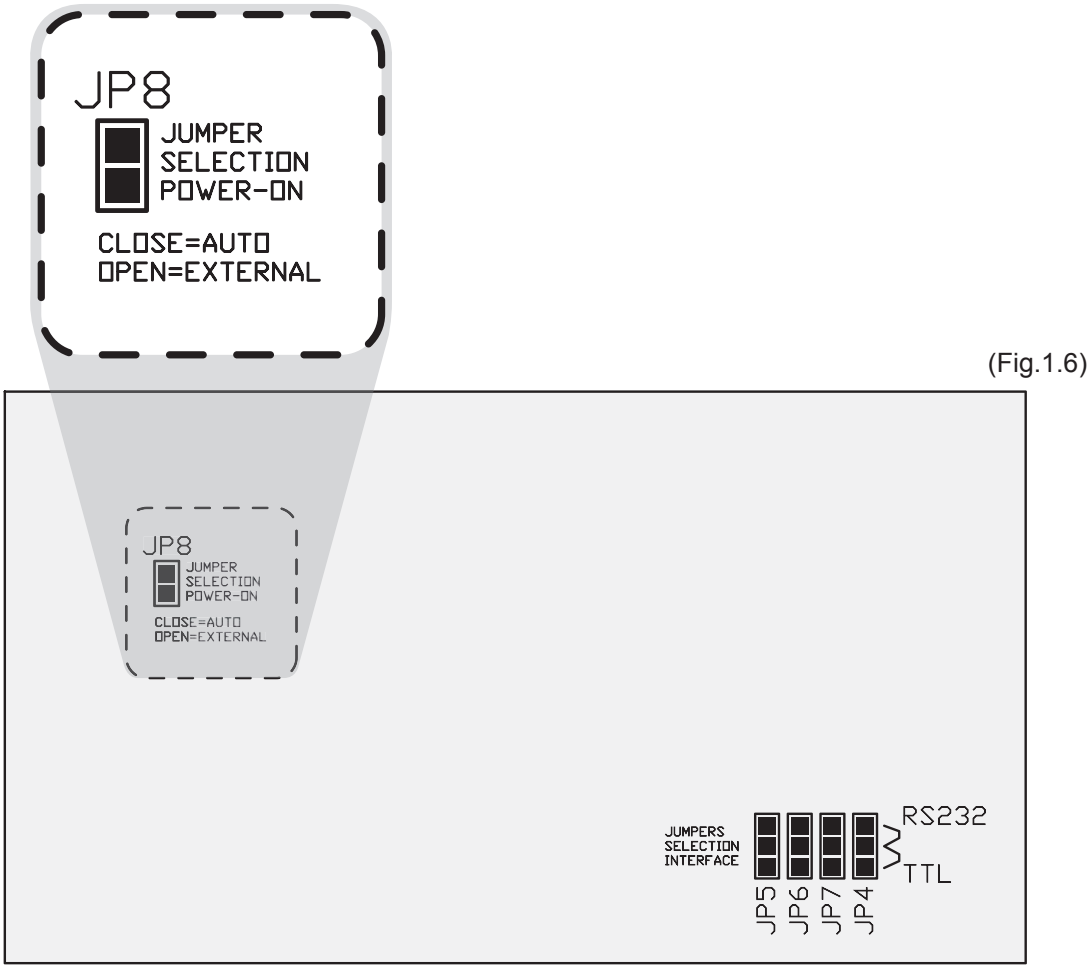
1.3.3 Power-On configuration

The JP8 jumper on controller board (see Fig.1.6) manages the power-on setting function as indicated:

J8	
CLOSED	Auto Power-On enabled
OPEN	Auto Power-On disabled

- **If JP8 is closed:** The printer switches on when powered up, and it switches off when power is off (default condition). In this condition the ESC '0' command has not effects.
- **If JP8 is open:** When the printer is powered up the low-consumption mode is activated. An impulse of at least 500 m/sec on pin 6 of the serial RS232 connector must be given to switch on the printer (see par. 2.2.1 and table 2.2). Use ESC "0" command to switch off the printer and bring it back to low-consumption mode.

Refer to Fig. 1.6 for the JP8 jumper position.

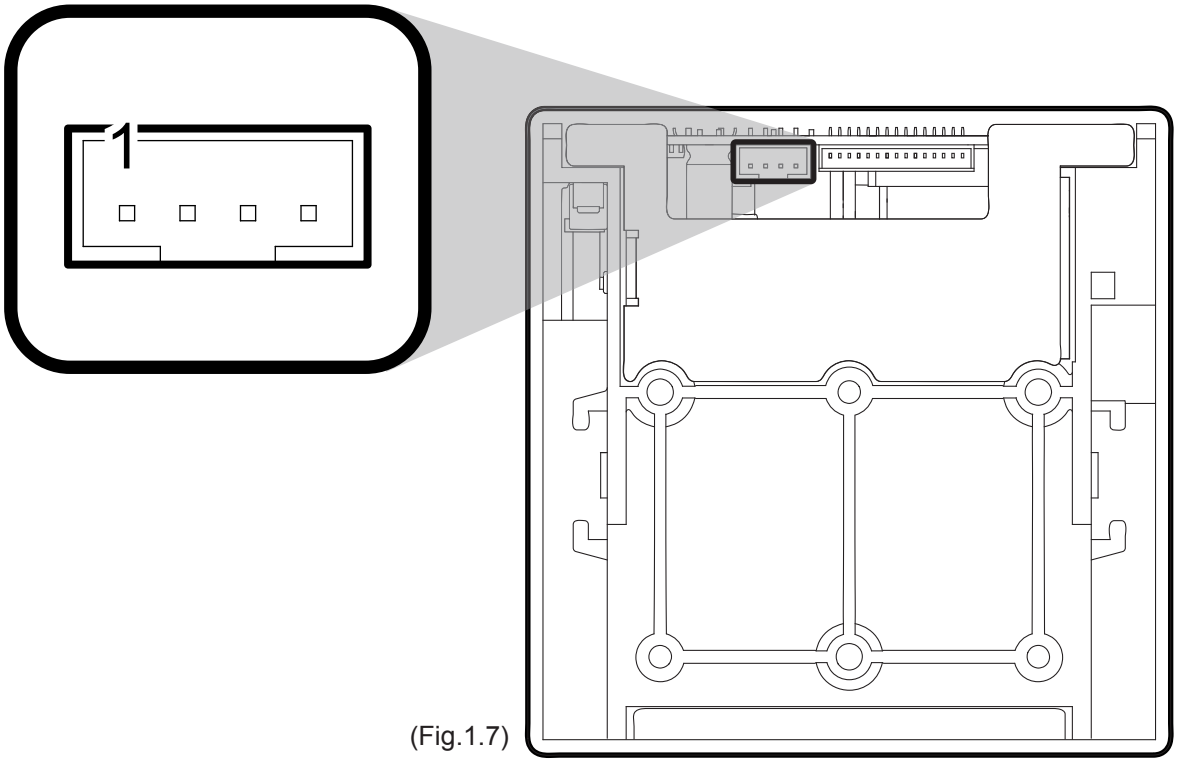


(Fig.1.6)

1.4 CONNECTIONS OF PLUS II-C AND PLUS II-P

1.4.1 Power supply

The printer is equipped with a 4 pin JST male connector (90°) for the power supply. The signals on the connector pins are as follows:



(Fig.1.7)

Model no. type:

Header: S4B-PH-K-S 90° (JST)
Housing: PHR-4 (JST) or equivalent

PIN	SIGNAL	DESCRIPTION
1	GND	Ground signal
2	GND	Ground signal
3	+Vin*	Head voltage
4	+Vcc*	Logic supply voltage

NOTE
(*) For the electrical specifications see Chapter 3.

WARNING
Respect the polarity of the power supply.

1.4.2 Setting serial interface

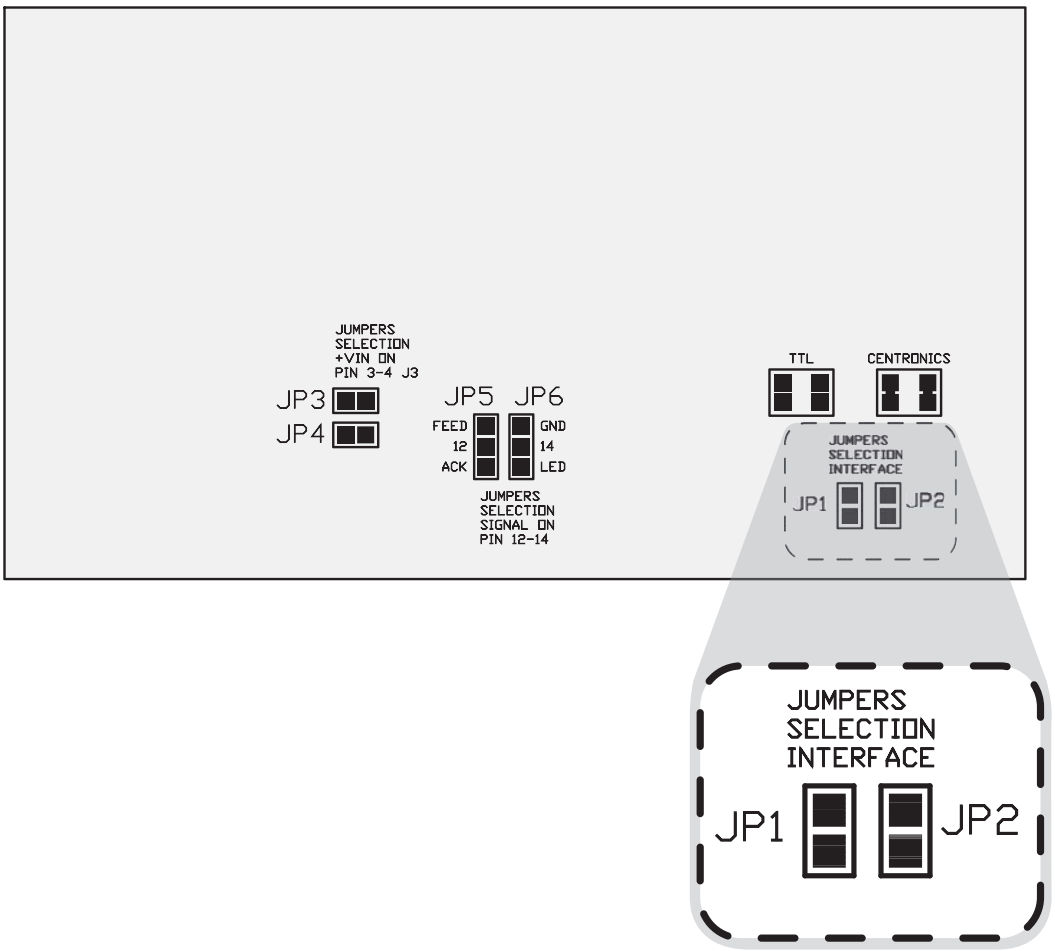
The JP2 and JP1 jumpers on controller board (see Fig.1.8) manages the setting of parallel interface as indicated:

JP1	JP2	PARALLEL INTERFACE SELECTION
CLOSED	CLOSED	Centronics
OPEN	OPEN	TTL

- **If JP1 and JP2 are closed:** the Centronics parallel interface is selected.
- **If JP1 and JP2 are open:** the TTL parallel interface is selected.

Refer to Fig.1.8 for the JP1 and JP2 jumpers position.

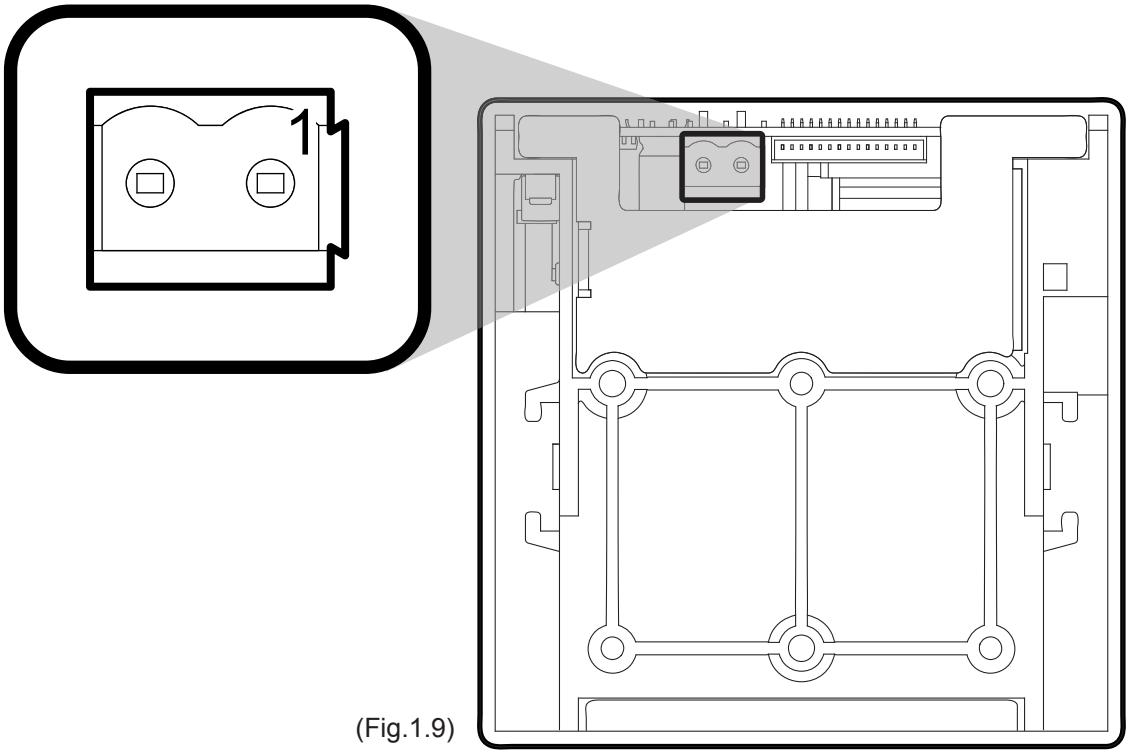
(Fig.1.8)



1.5 CONNECTIONS OF PLUS II-C-0004

1.5.1 Power supply

The printer is equipped with a 2 pin male connector terminal block (90°) for the power supply. The signals on the connector pins are as follows:



(Fig.1.9)

Model no. type:
Header: 90° Terminal block
(pitch 5.08mm)
Housing: Terminal block
(AWG 20-14)

PIN	SIGNAL	DESCRIPTION
1	GND	Ground signal
2	+Vin*	Logic supply voltage

NOTE
(*) For the electrical specifications see Chapter 3.

WARNING
Respect the polarity of the power supply.

1.5.2 Setting serial interface

See paragraph 1.4.2.

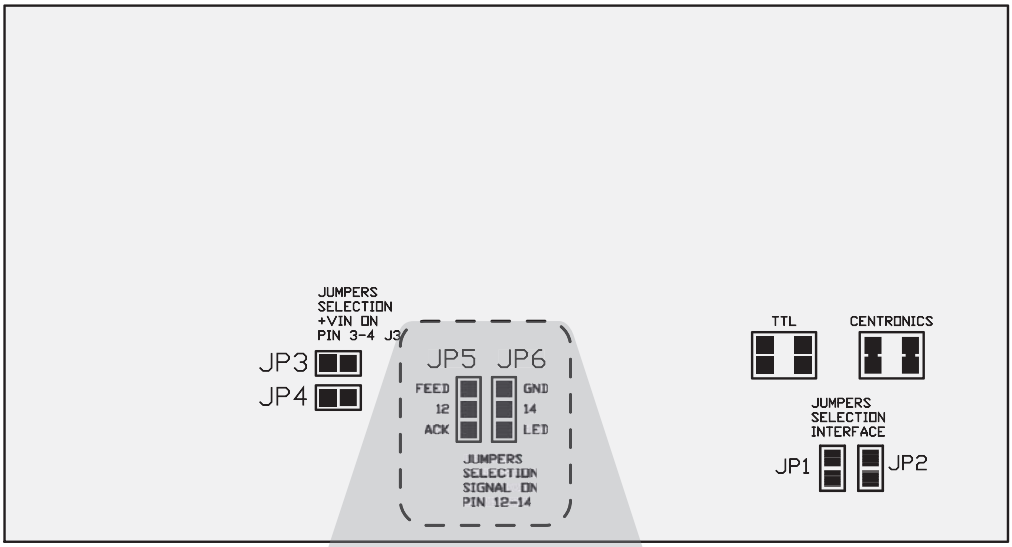
1.5.3 Power-On configuration

The JP5 and JP6 jumpers on controller board (see Fig.1.10) manages the setting for the signals of pin 12 and 14 of parallel interface connector as indicated:

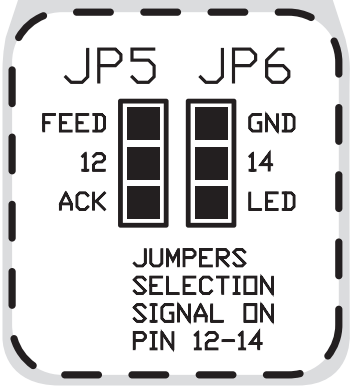
SIGNAL OF PIN 12	JP5
FEED	
ACK	

SIGNAL OF PIN 14	JP6
GND	
LED	

Refer to Fig.1.10 for the JP5 and JP6 jumpers position.



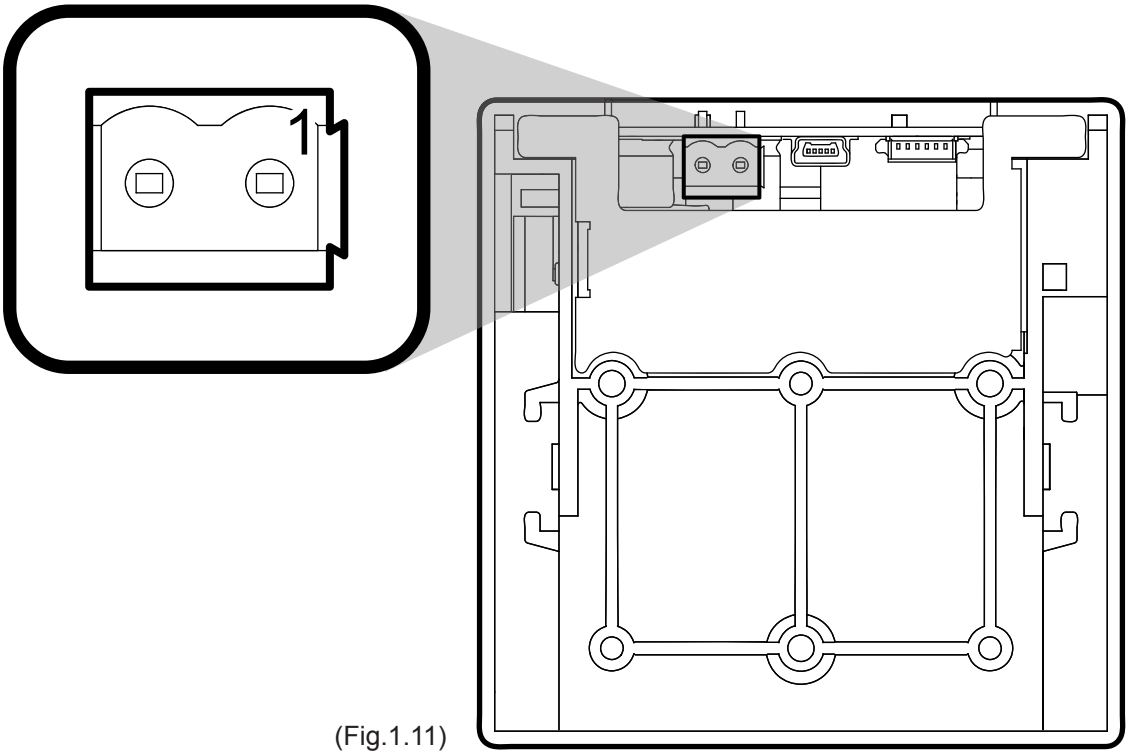
(Fig.1.10)



1.6 CONNECTIONS OF PLUS II-USB

1.6.1 Power supply

The printer is equipped with a 2 pin male connector terminal block (90°) for the power supply. The signals on the connector pins are as follows:



(Fig.1.11)

Model no. type:

Header: 90° Terminal block (pitch 5.08mm)
Housing: Terminal block (AWG 20-14)

PIN	SIGNAL	DESCRIPTION
1	GND	Ground signal
2	+Vin*	Logic supply voltage

NOTE
(*) For the electrical specifications see chapter 3.

WARNING
Respect the polarity of the power supply.

1.7 SELF-TEST

Printer operating status is indicated in the configuration report in which, next to the name of the components displayed (see fig.1.12, fig.1.13 and fig.1.14), the following information is given:

- under PRINTER TYPE is given the printer model.
- under HEAD VOLTAGE is given the voltage of the printing head.
- under HEAD TEMPERATURE is given the temperature of the printing head.

(Fig.1.12)

PRINTER SETUP

HEAD TEMP. [°C] = 32.5
HEAD VOLT [V] = 5,00

Baud Rate ..... : **38400 bps**
Data Length..... : **8 bits/chr**
Parity..... : **None**
Handshaking ..... : **Xon/Xoff**
Autofeed ..... : **CR Enabled**
Columns ..... : **24 col.**
Print Mode ..... : **Normal**
Char Mode..... : **Normal**
Print Density..... : **0**

[PUSH] *key to enter setup*
[FAST PUSH] *key to exit*

RS232 Models

(Fig.1.13)

PRINTER SETUP

HEAD TEMP. [°C] = 32.5
HEAD VOLT [V] = 5,00

Interface ..... : **Centronics**
Autofeed ..... : **CR Enabled**
Columns ..... : **24 col.**
Print Mode ..... : **Normal**
Char Mode..... : **Normal**
Print Density..... : **0**

[PUSH] *key to enter setup*
[FAST PUSH] *key to exit*

Centronics Models

[PUSH] *enter setup*
[FAST PUSH] *skip setup*

PRINTER SETUP

PRINTER TYPE = PLUSII-USB
HEAD VOLT. [V] = 06.58
HEAD TEMP. [°C] = 24

Emulation ..... : **PLUSII**
Baud Rate ..... : **9600 bps**
Data Length..... : **8 bits/chr**
Parity..... : **None**
Handshaking ..... : **Xon/Xoff**
Autofeed ..... : **CR enabled**
Print Mode ..... : **Normal**
Chars / inch ..... : **A=13 B=17 cpi**
Notch Alig. ..... : **Disabled**
Print Density..... : **0 %**

(Fig.1.14)

USB Models

1.8 CONFIGURATION

PLUS II permits the configuration of default parameters.

The configurable parameters for PLUS II-S, PLUS II-S-0004 and PLUS II-T models, are:

Baud Rate : 38400, 19200[D], 9600, 4800, 2400,1200, 600.
Data Length : 7, 8[D] bits/chr.
Parity : None[D], Even, Odd.
Handshaking : XON/XOFF[D], or Hardware.
Autofeed: CR disabled[D], CR enabled.
Columns: 24 col.[D], 40 col., 42 col.
Print Mode: Normal[D] , Reverse.
Char Mode: Normal[D] , Double width (2 x Width), Double height (2 x Height), Expanded.
Print Density: -2, -1, 0[D], +1, +2.

The configurable parameters PLUS II-C, PLUS II-C-0004 and PLUS II-P models, are:

Interface: Centronics, TTL.
Autofeed: CR disabled[D], CR enabled.
Columns: 24 col.D, 40 col., 42 col.
Print Mode: Normal[D] , Reverse.
Char Mode: Normal[D] , Double width (2 x Width), Double height (2 x Height), Expanded.
Print Density: -2, -1, 0[D], +1, +2.

The configurable parameters for PLUS II-USB model, are:

Emulation : PLUS II [D], ESC/POS.
Baud Rate : 38400, 19200[D], 9600, 4800, 2400,1200, 600.
Data Length : 7, 8[D] bits/chr.
Parity : None[D], Even, Odd.
Handshaking : XON/XOFF[D], or Hardware.
Autofeed: CR disabled[D], CR enabled.
Print Mode: Normal[D] , Reverse.
Char / inch : A=17 B=22 cpi [D], A=13 B=17 cpi.
Notch Alignment : Disabled[D], Enabled.

- **Notch Distance [mm x 10][(1)]:** 0[D], 1, 2, 3, 4, 5, 6, 7, 8, 9.
- **Notch Distance [mm x 1][(1)]:** 0[D], 1, 2, 3, 4, 5, 6, 7, 8, 9.
- **Notch Distance [mm x .1][(1)]:** 0[D], 1, 2, 3, 4, 5, 6, 7, 8, 9.

Print Density: -50%, -37%, -25%, -12%, 0[D], +12%, +25%, +37%, +50%, linerless.

Note: The parameters marked with the symbol [D] are the default values.
Note [(1)]: If the “Notch Alignment” parameter is set to “Disabled” this parameter doesn’t appear in the “Printer Setup” report. The “Notch distance” parameter represents the distance in mm from the upper margin of the ticket to the black mark on the ticket. For example, to set notch distance to 15mm, modify the following parameters in order to obtain the desired values as indicated: Notch Distance [mm x 10]=1; Notch Distance [mm x 1]=5; Notch Distance [mm x .1]=0.

The settings made are stored in nonvolatile memory and are loaded automatically.
During power-up, if the FEED key is held down, the printer enters the autotest routine and prints out the setup report. The printer will remain in standby in Hexadecimal dump mode (see par. 1.9) until another key is pressed or characters are received through the printer communication port.
When the FEED key is pressed, the printer enters parameter configuration. Each time the FEED key is pressed, the parameter will change and the current value will be printed out. Once the desired value has been attained, hold the FEED key down for at least a second to pass to the next parameter, and so on. Printing out of a new printer set up report indicates that set up is complete.

1.9 HEXADECIMAL DUMP

This function is used to display the characters received from the communications port; after the reception of each 8 characters from the communications port, the printer prints out both the hexadecimal code received as well as the corresponding ASCII code.
Shown below is an example of a Hexadecimal Dump:

HEXADECIMAL DUMP

```
31 32 33 34 35 36 37 38     12345678
39 30 31 32 33 34 35 36     90123456
37 38 39 75 69 73 64 66     789uisdf
68 6B 6A 73 64 68 66 68     hkjsdhfh
73 64 66 6B 6A 68 73 64     sdfkjhsd
66 73 64 66 6B 68 6A 77     fsdfkhjw
65 69 6F 79 75 77 71 65     eioyuwqe
6F 72 69 75 77 65 72 69     oriuweri
6F 75 77 65 72 69 6F 75     ouweriou
77 65 72 69 6F 75 77 65     weriouwe
72 69 6F 75 77 65 72 68     riouwerh
6B 6C 73 64 66 68 6B 73     klsdfhks
64 66 6B 73 64 66 68 6A     dfksdfhj
73 64 66 6B 6A F2 73 64     sdfkj≥sd
66 6B F2 6A 73 68 64 66     fk≥jshdf
6A 6B 6C 68                 jklh
```

(Fig.1.15)

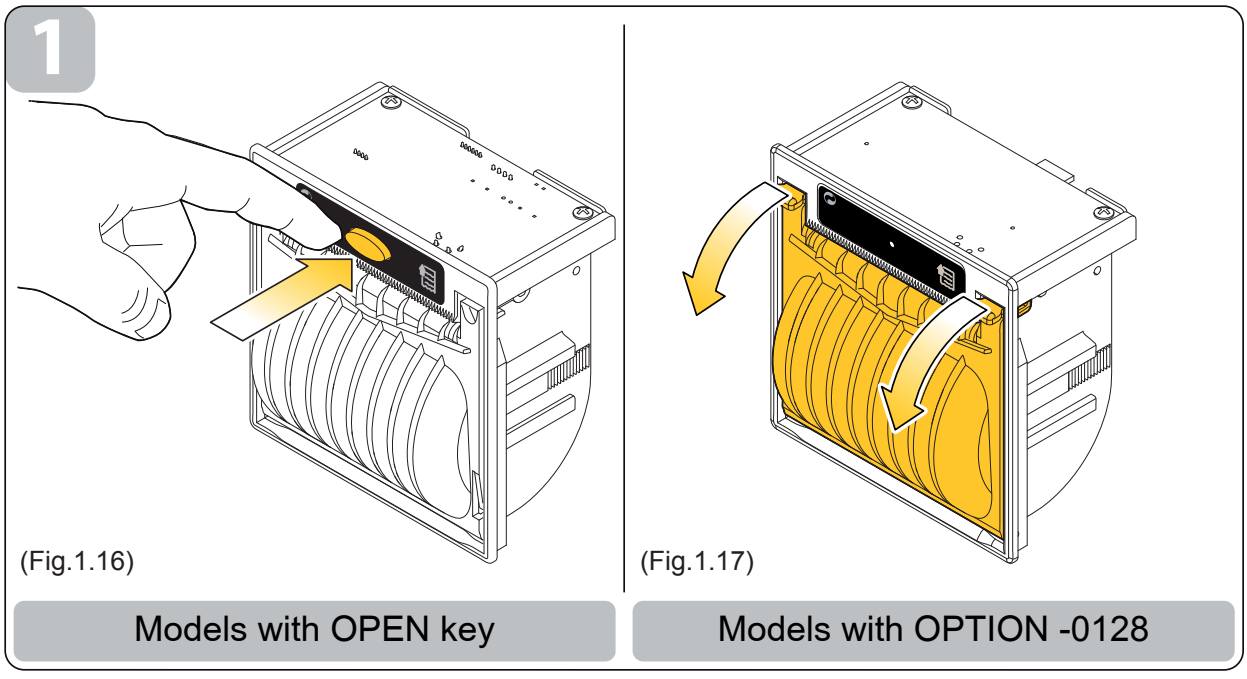
1.10 MAINTENANCE

1.10.1 Changing the paper roll

To change paper roll, proceed as follows:

1. Open the paper roll compartment by pressing the OPEN key (see fig.1.16) or using the two opening levers on the plastic cover for model with OPTION -0128 (see fig.1.17).
2. Move down the plastic cover to the maximum opening (see fig.1.18).
3. Place the paper roll making sure that it unrolls in the proper direction as shown (see fig.1.19).
4. Take out the paper and close the plastic cover (see fig.1.20).
5. Push on the plastic cover to lock it (see fig.1.21).
6. Tear off the exceeding paper using the jagged edge (see fig.1.22).

NOTE:
Unless otherwise indicated, the operations are valid for all the PLUS II models.



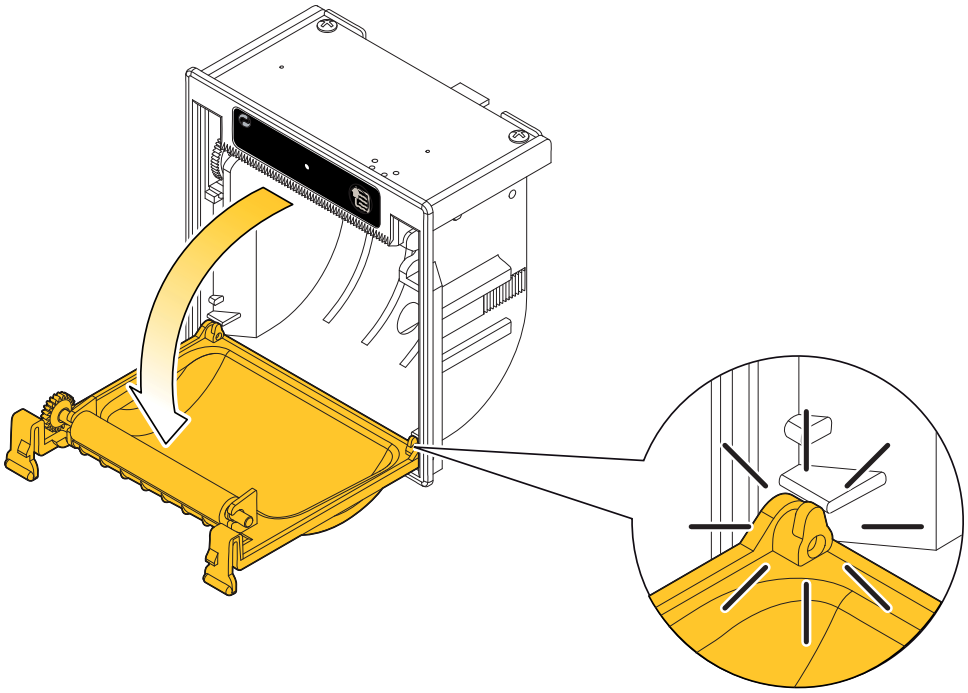
(Fig.1.16)

Models with OPEN key

(Fig.1.17)

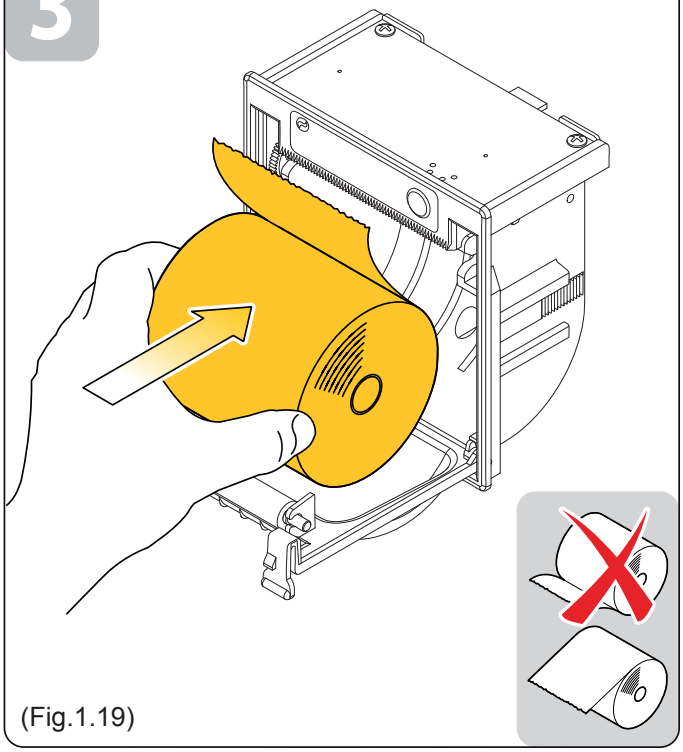
Models with OPTION -0128

2



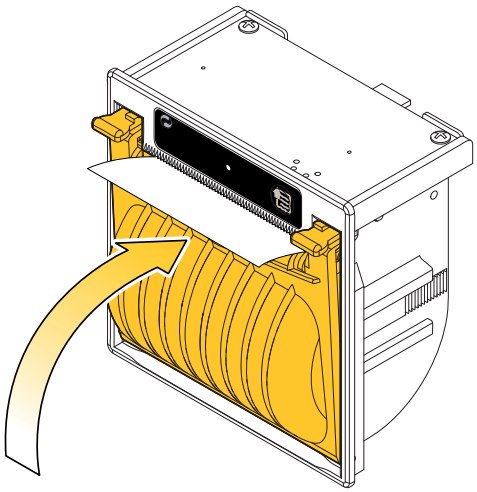
(Fig.1.18)

3

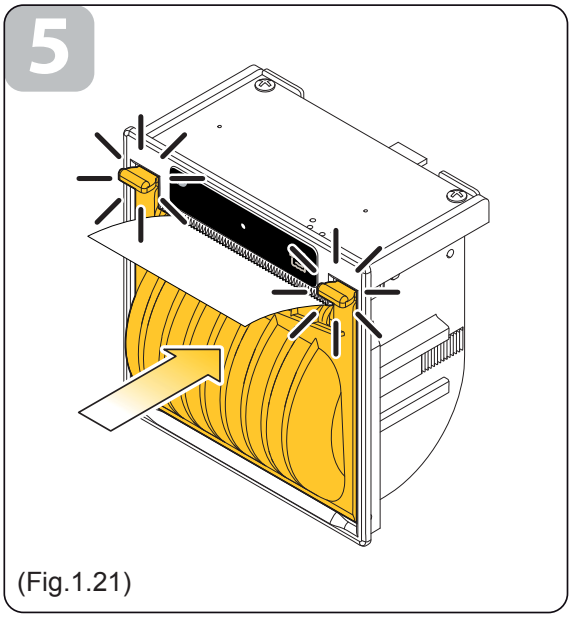


(Fig.1.19)

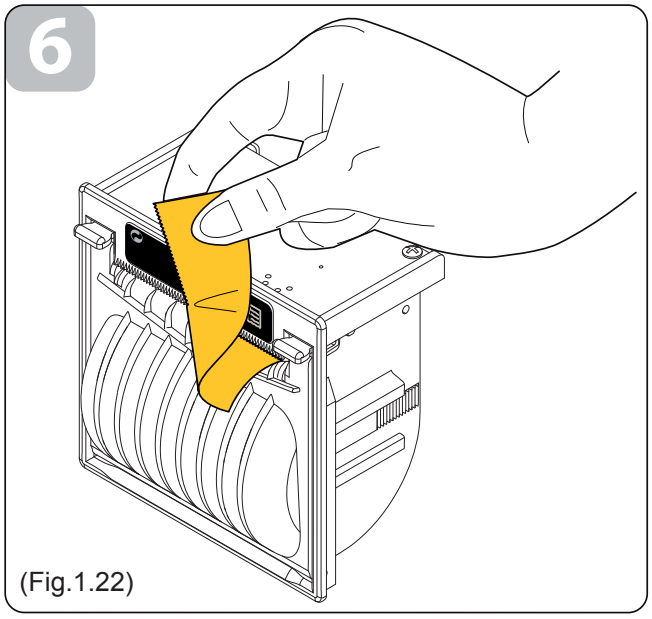
4



(Fig.1.20)



(Fig.1.21)



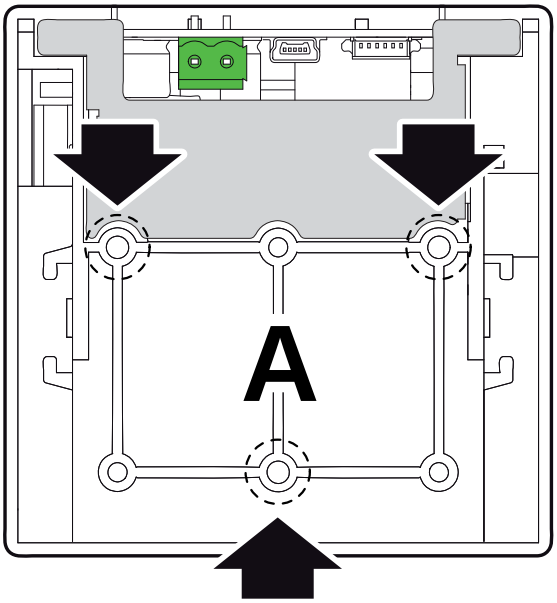
(Fig.1.22)

1.10.2 Notes about the installation

Fixing to the panel

Fix the printer in the 3 holes as shown in the scheme **(A)** (see fig.1.23), using M3 tapping screws (n.3).

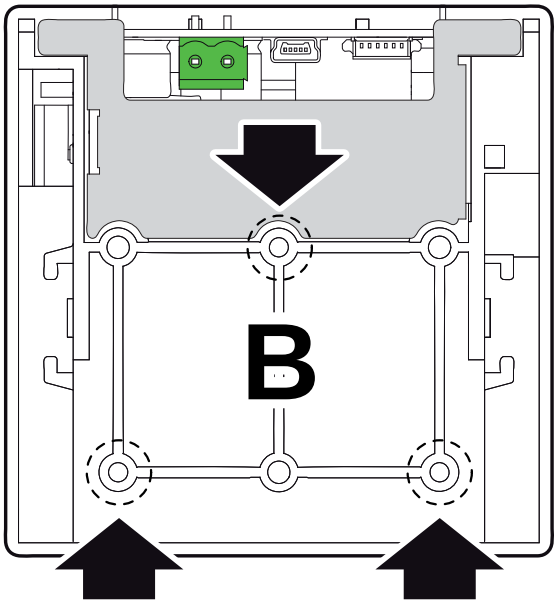
(Fig.1.23)



Fixing back

Fix the printer in the 3 holes as shown in the scheme **(B)** (see fig.1.24), using 3 screws for plastic d=3 (6 mm usable length).

(Fig.1.24)



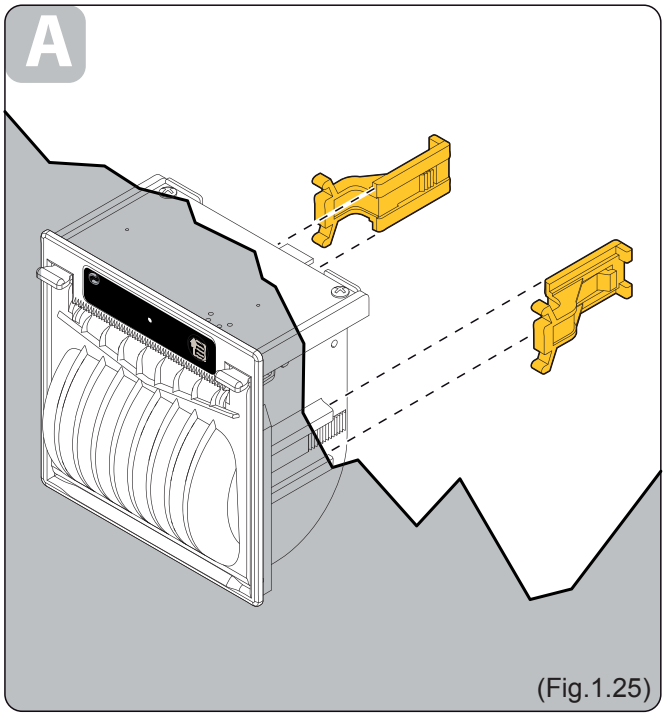
NOTE:
The mounting operations are valid for all the PLUS II models.

1.10.3 “EASYLOCK” fixing system

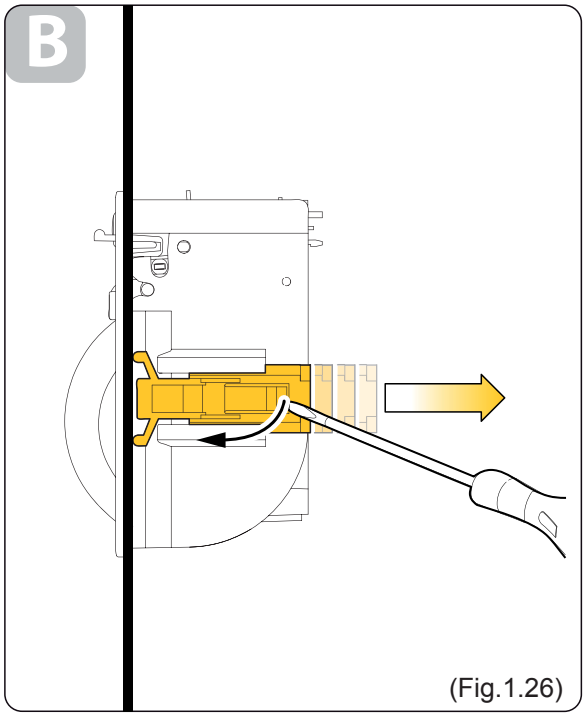
This system allows to adapt the printer to every panel thickness and it is not necessary to use other fixing tools.

A FIXING (see fig.1.25)
- Use only the 2 hooks, provided in the package.
- Place the printer on the panel.
- Insert the 2 fixing hooks in their seat.
- Push the 2 fixing hooks against the panel to lock the printer.

B REMOVING (see fig.1.26)
- Lift the flap by using a flat screwdriver.
- Take away the hook.



(Fig.1.25)



(Fig.1.26)

NOTE:
The mounting operations are valid for all the PLUS II models.

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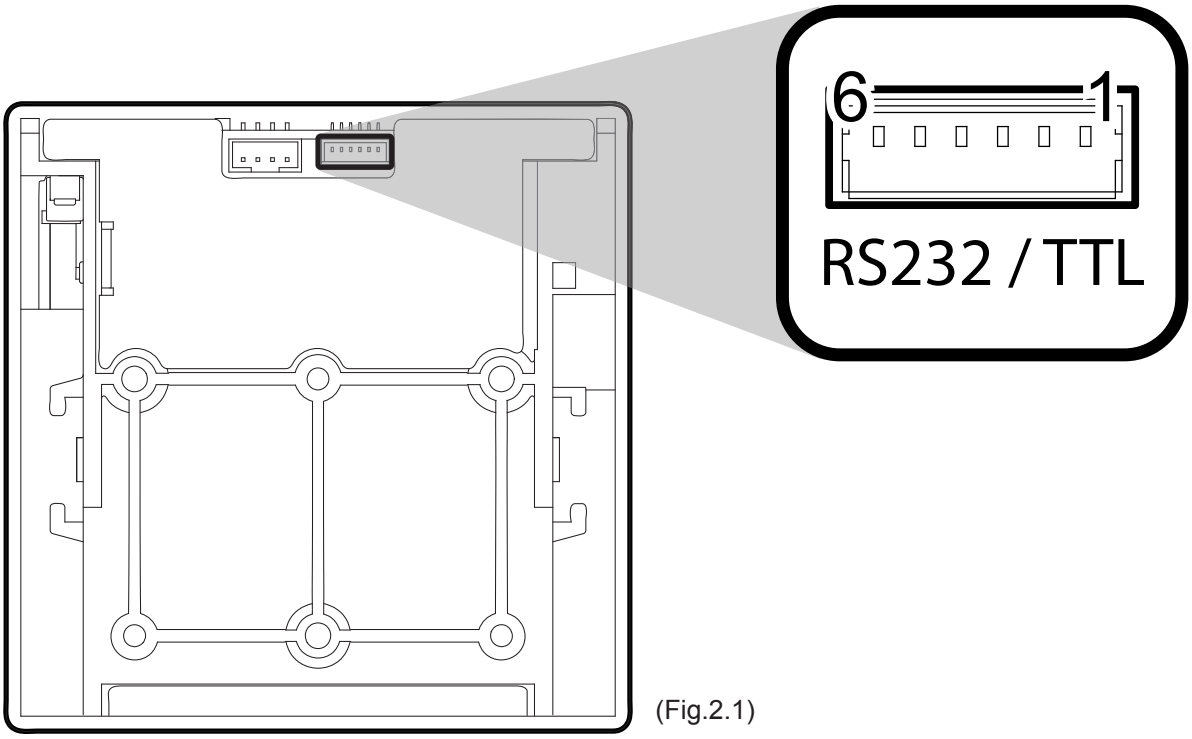
2.1 INTERFACE OF PLUS II-S AND PLUS II-T

The printer with a serial RS232/TTL interface has a molex 6-pin male connector 53261 series (90°). Refer to the table below for the connector pin signals:



(Fig.2.1)

Model no. type:

Header: Molex 53261 series 6 pin
Housing: Molex 51021 series 6 pin (no. 51021-0600))

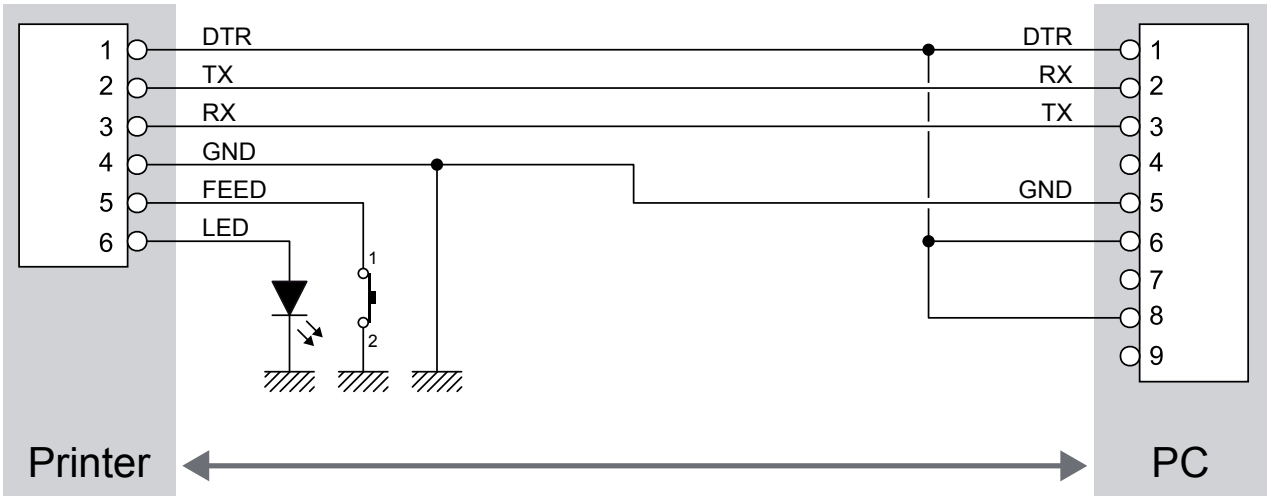
(Tab.2.1)

PIN	SIGNAL	IN / OUT	DESCRIPTION
1	DTR	OUT	Data terminal ready
2	TX	OUT	Data transmission
3	RX	IN	Data reception
4	GND		Ground signal
5	FEED	IN	FEED signal (active at low level)
6	LED	OUT	LED signal (external)

2.1.1 Connection Printer-PC

The diagrams below show a sample connection between printer and Personal Computer using a 6 pin female Molex 51021 connector by printer side and a 9 pin female connector by a PC side.

(Fig.2.2)



In the serial protocol, the signals which distinguish the communication are TD, RD, and RTS if the RTS/CTS protocol has been selected while, if the XON/XOFF protocol has been selected, the signals are TD and RD.

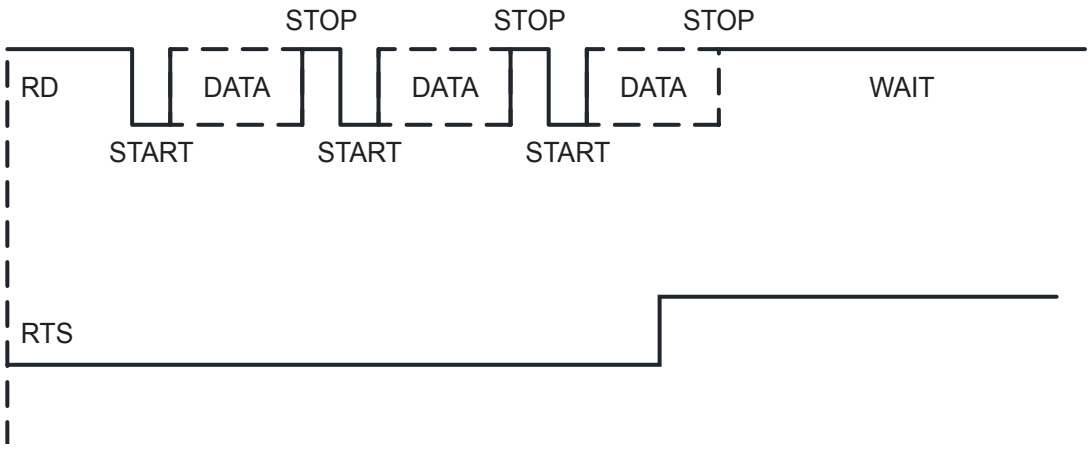
Transmission format

NOTE

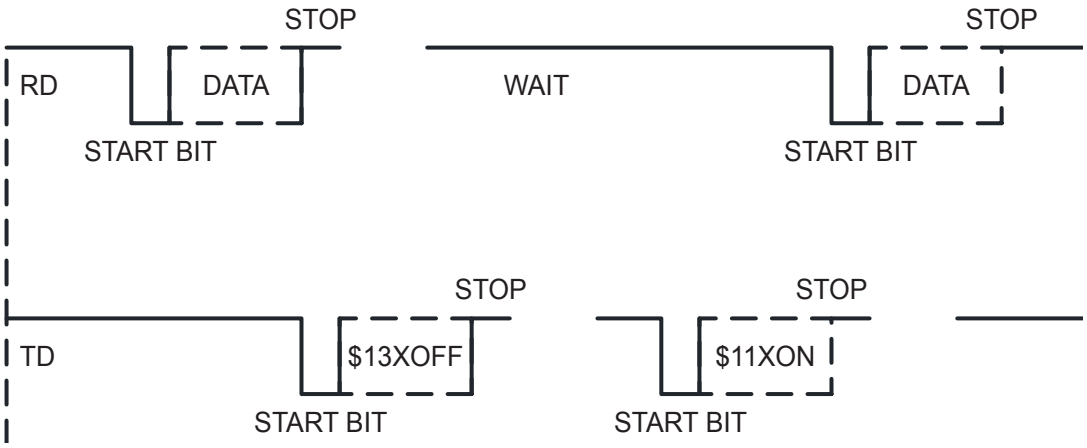
(1) Bit 7 is present if only in the printer set-up is enabled 8 bit/char as data length.

(2) Parity Bit is preset if only in the printer set-up the parity is enabled.

RTS/CTS Protocol

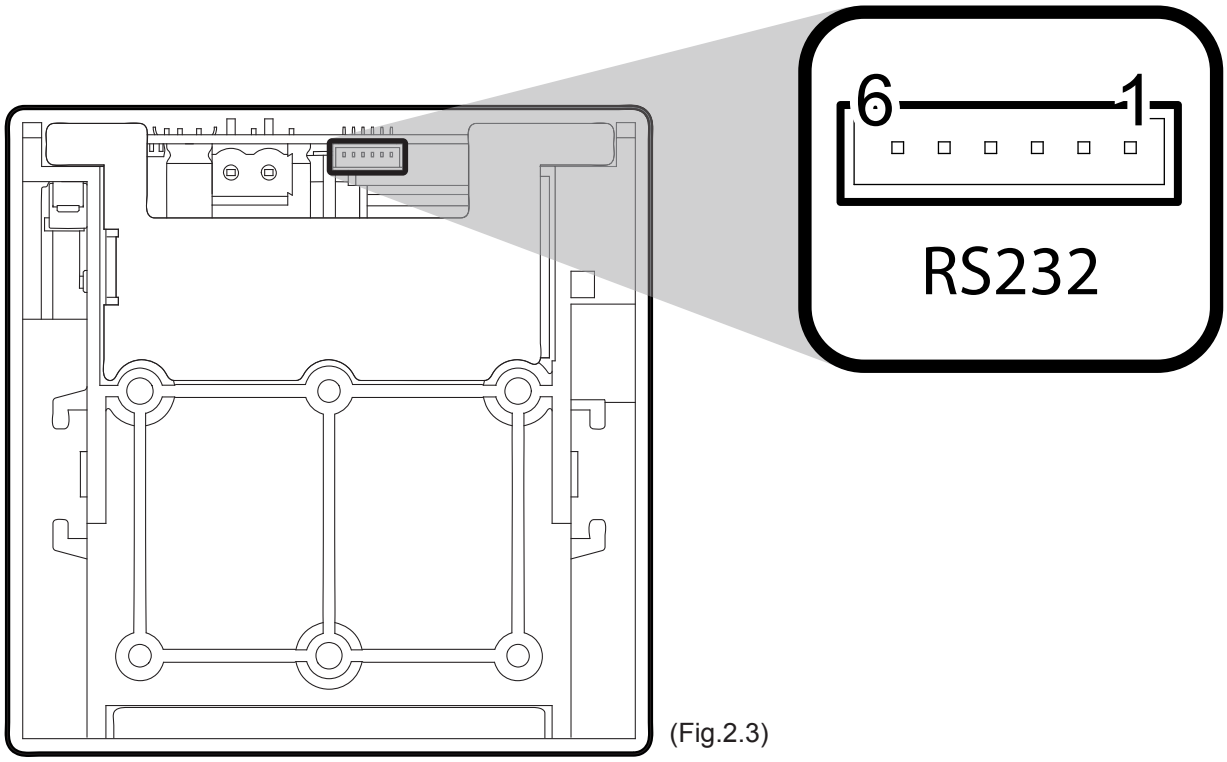


XON/XOFF Protocol



2.2 INTERFACE OF PLUS II-S-0004

The printer with RS232 interface has a 6-pin male connector AMP-MODU II (90°). Refer to the table below for the connector pin signals:



(Fig.2.3)

Model no. type:

Header: AMP-MODU II (no. 280379-2)
Housing: AMP-MODU II (no. 280360)

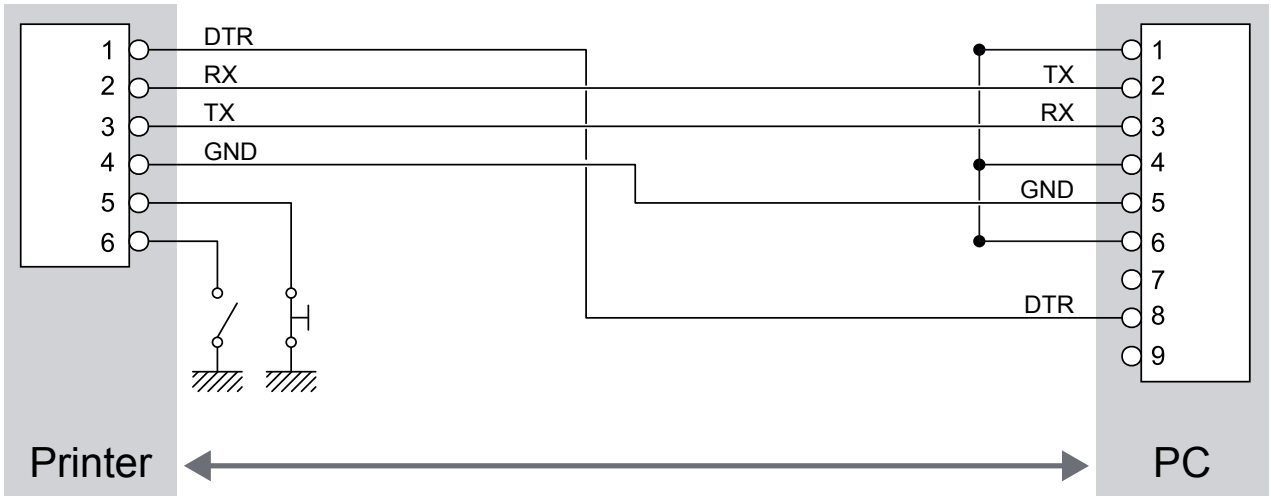
(Tab.2.2)

PIN	SIGNAL	IN / OUT	DESCRIPTION
1	DTR	OUT	Data terminal ready
2	TX	OUT	Data transmission
3	RX	IN	Data reception
4	GND		Ground signal
5	RESET	IN	Reset signal (active at a low level)
6	POWER-ON	IN	Power-On signal (an impulse of at least 500 m/sec. active at a high level)

2.2.1 Connection Printer-PC

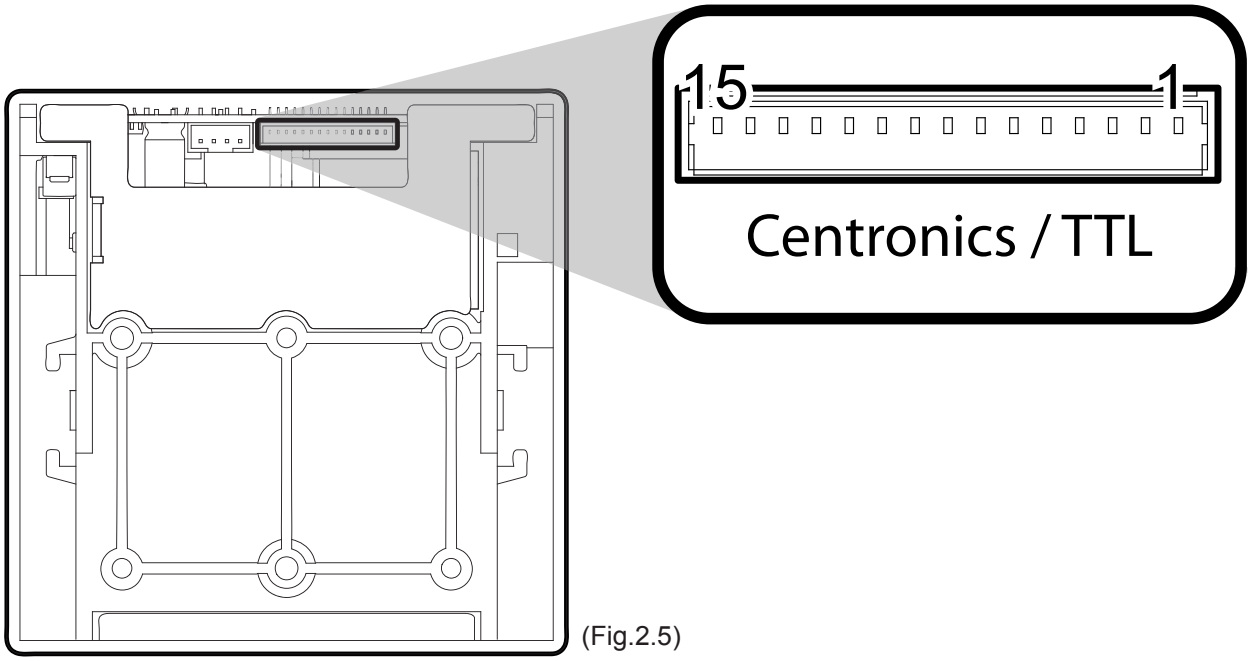
The diagrams below show a sample connection between printer and Personal Computer using a 6 pin female AMP MOUD II connector by printer side and a 9 pin female connector by a PC side.

(Fig.2.4)



2.3 INTERFACE OF PLUS II-C AND PLUS II-P

The printer with parallel Centronics/TTL interface has a molex 15-pin male connector 53261 series (90°). Refer to the table below for the connector pin signals:



(Fig.2.5)

Model no. type:

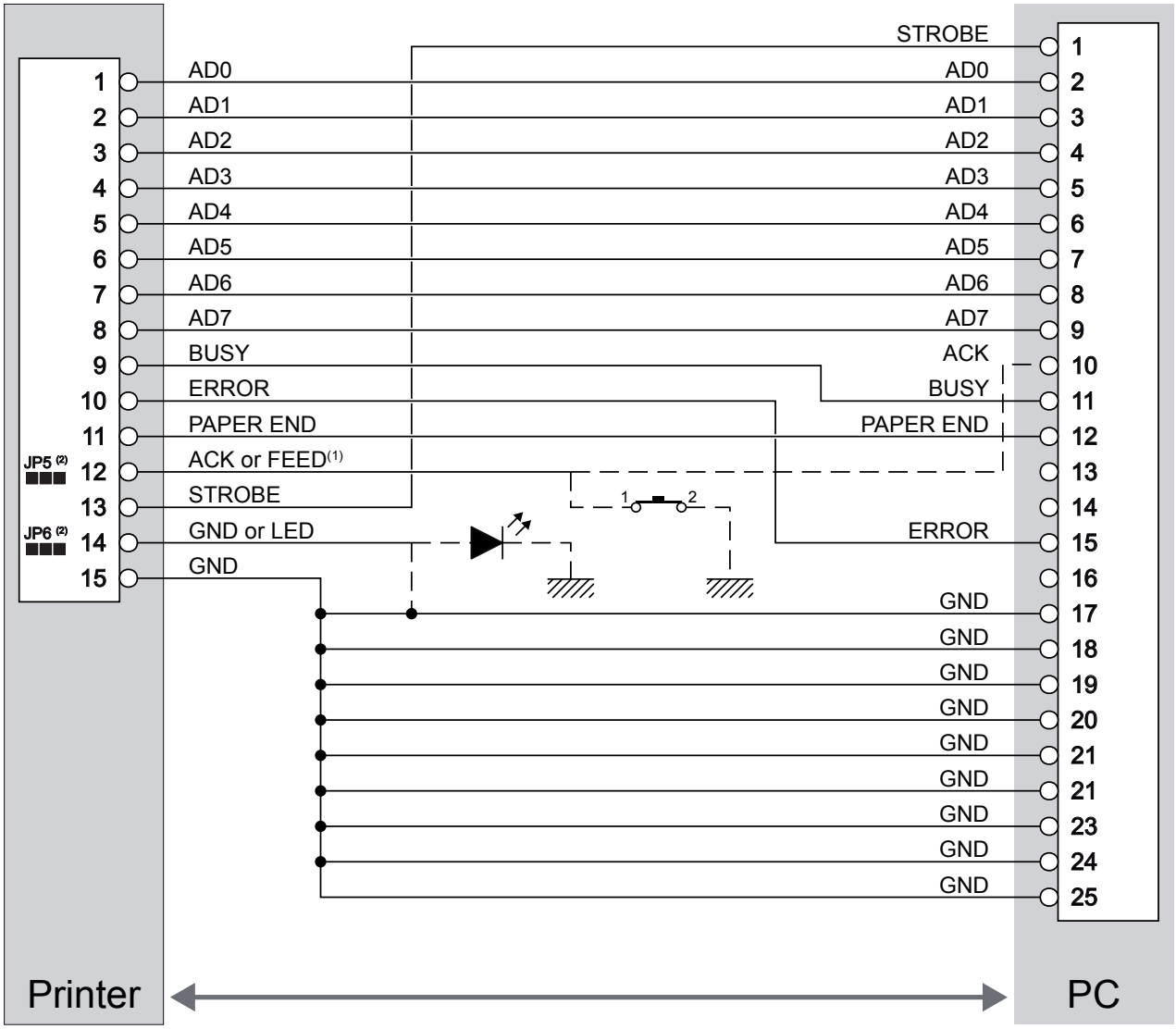
Header: Molex 53261 series 15 pin
Housing: Molex 51021 series 15 pin
(no. 51021-1500)

(Tab.2.3)

PIN	SIGNAL	IN /OUT	DESCRIPTION	
1	AD0	IN	Data 0	
2	AD1	IN	Data 1	
3	AD2	IN	Data 2	
4	AD3	IN	Data 3	
5	AD4	IN	Data 4	
6	AD5	IN	Data 5	
7	AD6	IN	Data 6	
8	AD7	IN	Data 7	
9	BUSY	OUT	Peripheral not ready to receive data	
10	ERROR	OUT	Error	
11	PAPER END	OUT	Paper end	
12	ACK	OUT	Acknowledge	Setting with JP5 (2)
	FEED (1)	IN	FEED signal (active at low level)	
13	STROBE	IN	Strobe	
14	GND		Ground signal	Setting with JP6 (2)
	LED	OUT	LED signal (external)	
15	GND		Ground signal	

2.3.1 Connection Printer-PC

The following scheme, represent the connection cable configuration between Molex connector 51021 series 15-pin (female) and a 25-pin connector (female). This cable can be use as wiring between the printer board and a 25-pin connector (male).



(Fig.2.6)

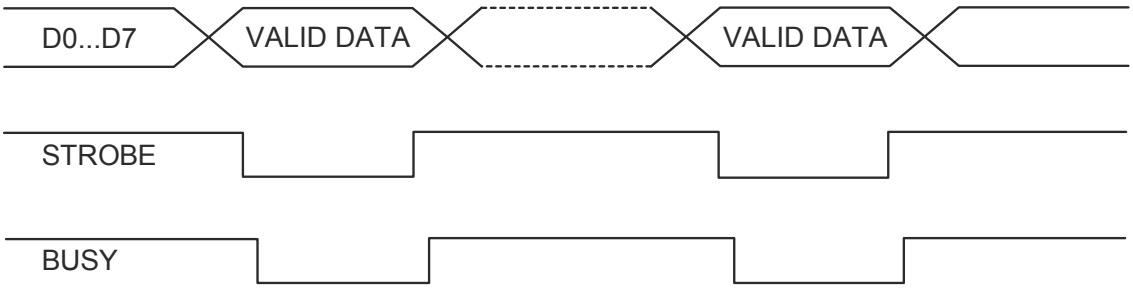
NOTE

(1) Signal not available with Centronics interface.

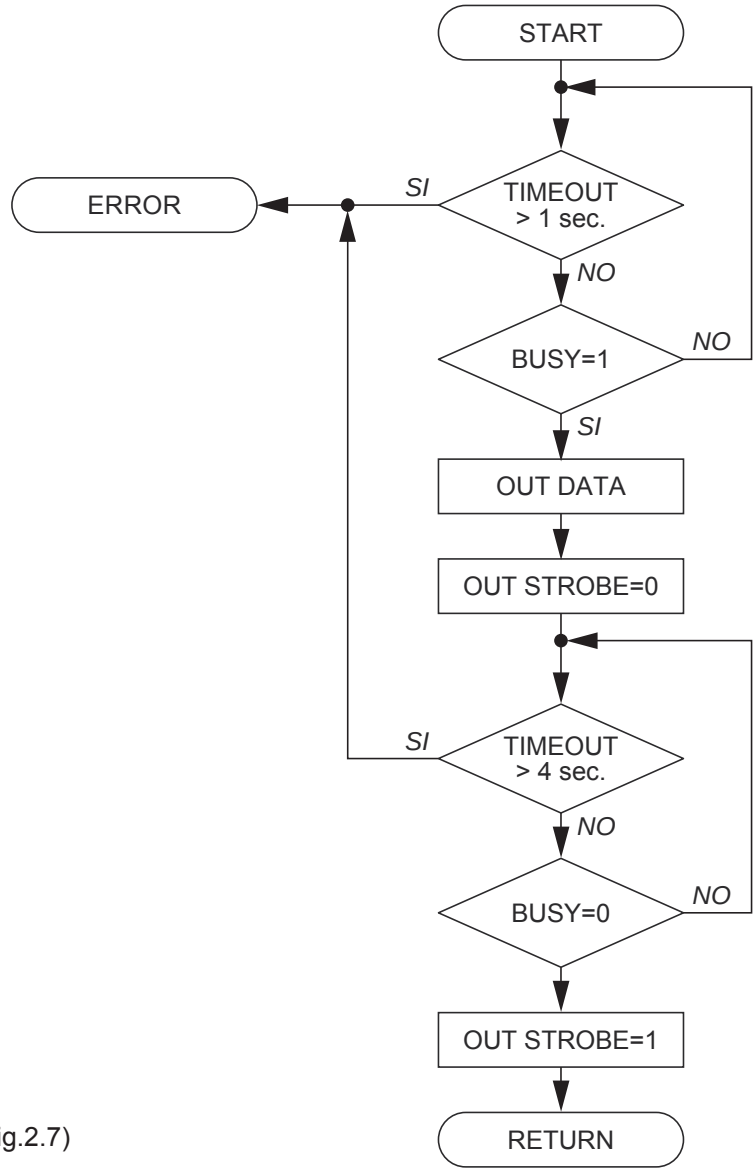
(2) For JP5 and JP6 settings see paragraph 1.5.3.

For parallel TTL interface printer the communication signals are: 8 bit DATA BUS, STROBE (indicate the data validity) and BUSY (indicate that the printer is ready to receive data).

Transmission format



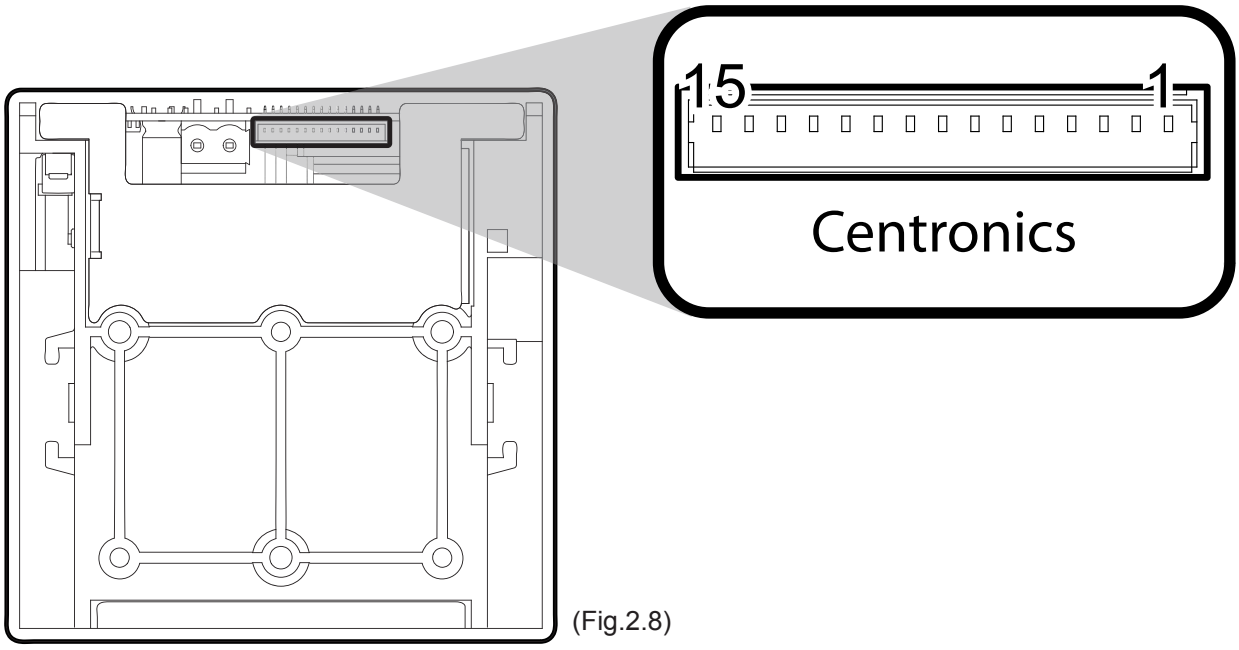
Flow diagram



(Fig.2.7)

2.4 INTERFACES OF PLUSII-C-0004

The printer with a parallel Centronics interface, 0004 option, has a molex 15-pin male connector 53261 series (90°). Refer to the table below for the connector pin signals:



(Fig.2.8)

Model no. type

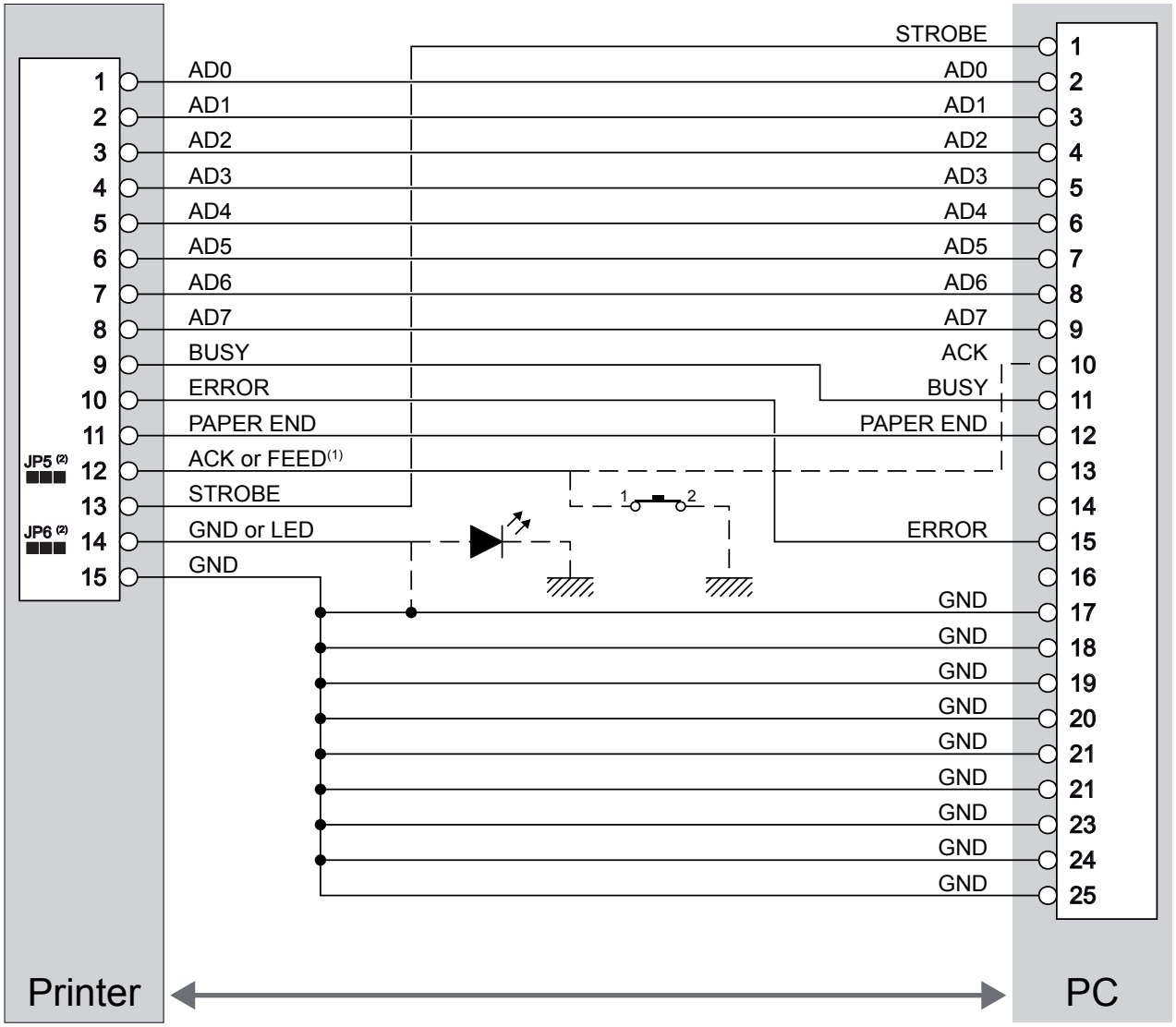
Header : Molex 53261 series 15 pin
Housing : Molex 51021 series 15 pin
(no. 51021-1500)

(Tab.2.4)

PIN	SIGNAL	IN /OUT	DESCRIPTION	
1	AD0	IN	Data 0	
2	AD1	IN	Data 1	
3	AD2	IN	Data 2	
4	AD3	IN	Data 3	
5	AD4	IN	Data 4	
6	AD5	IN	Data 5	
7	AD6	IN	Data 6	
8	AD7	IN	Data 7	
9	BUSY	OUT	Peripheral not ready to receive data	
10	ERROR	OUT	Error	
11	PAPER END	OUT	Paper end	
12	ACK	OUT	Acknowledge	Setting with JP5 (2)
	FEED (1)	IN	FEED signal (active at low level)	
13	STROBE	IN	Strobe	
14	GND		Ground signal	Setting with JP6 (2)
	LED	OUT	LED signal (external)	
15	GND		Ground signal	

2.4.1 Connection Printer-PC

The following scheme, represent the connection cable configuration between Molex connector 51021 series 15-pin (female) and a 25-pin connector (female). This cable can be use as wiring between the printer board and a 25-pin connector (male).



(Fig.2.9)

NOTE

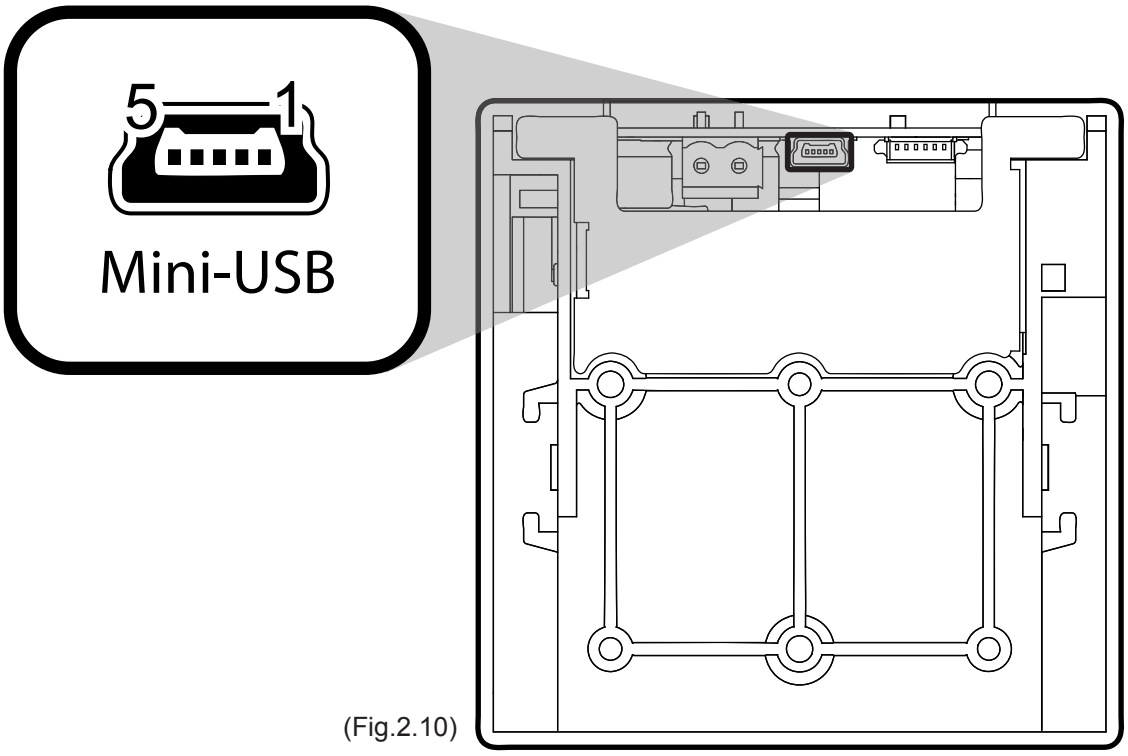
(1) Signal not available with Centronics interface.

(2) For JP5 and JP6 settings see paragraph 1.5.3.

2.5 INTERFACES OF PLUS II-USB

2.5.1 USB interface

The printer is provided with a 6-pin male connector AMP-MODU II (90°). Refer to the table below for the connector pin signals:



(Fig.2.10)

Model no. type:

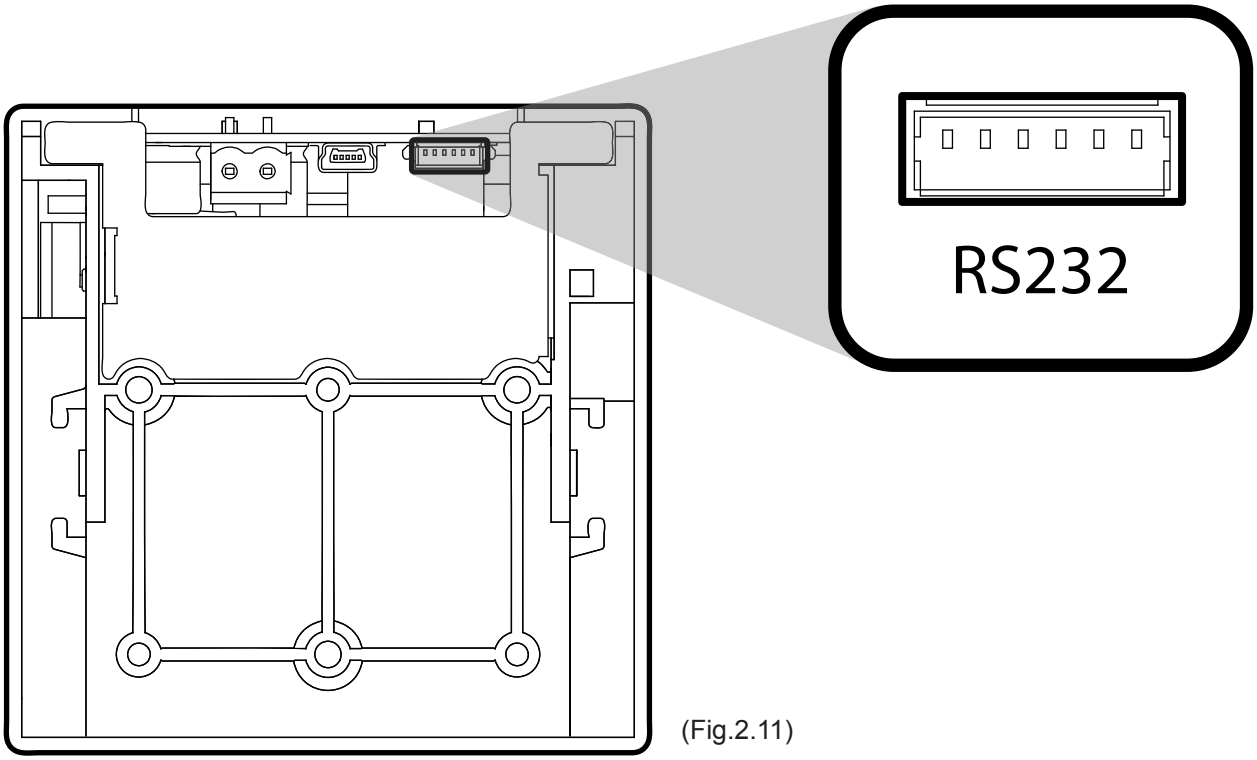
Header: AMP-MODU II (90°) 6 pin

(Tab.2.5)

PIN	SIGNAL	DESCRIPTION
1	V BUS	+5 Vdc
2	D -	Data -
3	D +	Data +
4	N.C.	Not connected
5	GND	Ground signal

2.5.2 RS232 serial interface

The printer is provided with a molex 6-pin male connector 53261 series (90°).
This interface is RESERVED only to service use.



(Fig.2.11)

3.1 TECHNICAL SPECIFICATIONS

Table 3.1 gives the main technical specifications for the printer.

(Tab.3.1)

Available interfaces		
PLUS II-S, PLUS II-S-0004, PLUS II-T	Serial RS232 / TTL (Baud rate: from 600 to 38400 bps)	
PLUS II-C, PLUS II-C-0004, PLUS II-P	Parallel Centronics / TTL	
PLUS II-USB	Serial RS232 (1) (Baud rate: from 1200 to 115200 bps)	USB (2.0 Full speed)
Sensors	Head temperature, paper end OPTIONAL: Cover open sensor	
Printing driver	Windows™ 2K, XP	
Receive buffer	128 bytes	2 Kbytes (2)
Flash memory	32 Kbytes	512 Kbytes (2)
Emulation	ESC/POS	PLUS II (2)
PAPER SPECIFICATIONS		
Type of paper	Thermal rolls (heat-sensitive side on outside of roll) LINERLESS paper (see paragraph 1.1.1) Label paper roll (see paragraph 1.1.2)	
Paper width	57 mm ±0.5 mm	
Recommended types of paper	from 55 g/m^2 to 70 g/m^2	
Internal roll core diameter	13 mm	
External roll diameter	max. Ø50 mm	
Core type	Cardboard or plastic	
ENVIRONMENTAL CONDITIONS		
Operating temperature	0-50°C	
Relative humidity	10-85% Rh	
Storage temperature / Humidity	-20 °C – 70 °C / 10% - 90% Rh	
MECHANICAL SPECIFICATIONS		
Dimensions	Length [mm] =	85 max.
	Width [mm] =	57 max.
	Height [mm] =	85.5 max
Weight [gr]	141 (3)	

NOTE
(1) RESERVED interface, only for service use.
(2) Only for PLUS II-USB.
(3) Referred without paper roll.

Table 3.2 gives the printing specifications for the PLUS II-S, PLUS II-S-0004, PLUS II-T, PLUS II-C, PLUS II-C-0004, PLUS II-P.

(Tab.3.2)

PRINTER SPECIFICATIONS		
Print method	Thermal, fixed head	
Resolution	204 DPI (8 dot/mm)	
Printing mode	Straight, 180°	
Printing format	Normal, width from 1 to 2, bold, reverse, underlined	
Character fonts	ASCII standard, international	
Graphics memory	1 Logo (384 x 85 dots)	
Number of columns	**24**	**40**
Character matrix	16 X 24	8 X 24
Printing speed		
Lines /sec.	13	13
Chars / sec.	307	512
Characters (L x H mm)	2 x 3	1 x 3

Table 3.3 gives the printing specifications for the PLUS II-USB.

(Tab.3.3)

PRINTER SPECIFICATIONS				
Print method	Thermal, fixed head			
Resolution	204 DPI (8 dot/mm)			
Printing mode	Straight, 90°, 180°, 270°			
Printing format	Height/width from 1 to 8, expanded, negative, underlined, italic			
Character fonts	PC837, PC850, PC860, PC863, PC865, PC858 (euro)			
Graphics memory	4 Logo (384 x 680 dots)			
Number of columns	**24**	**32**	**40**	**42**
Character matrix	16 x 24	12 x 24	9 x 24	
Character density	12 cpi	17 cpi	22 cpi	
Characters (L x H mm)	2 x 3	1,5 x 3	1,1 x 3	
Printing speed	Up to 50 mm/sec			

Table 3.4 gives the electrical specifications for the PLUS II-S, PLUS II-S-0004, PLUS II-T, PLUS II-C, PLUS II-C-0004, PLUS II-P.

(Tab.3.4)

ELECTRICAL CONDITIONS		
Power Supply	**Vcc**	**Vin**
PLUS II-S, PLUS II-T	3.5 ÷ 8 V *(Range max.)*	3.5 ÷ 8 V *(Range max.)*
PLUS II-S-0004	-	9 ÷ 48 V *(Range max.)*
PLUS II-C, PLUS II-P	5 ± 5%	3.5 ÷ 8 V *(Range max.)*
PLUS II-C-0004	-	9 ÷ 48 V *(Range max.)*
Absorptions (5 V)		
Medium (50% dot ON)	0.2 A (Vcc)	3.3 A (Vin)
Stand by	0.1 A	
Absorptions (9 ÷ 48 V)		
Medium (50% dot ON)	3 A (9 V)	0.7 A (48 V)
Stand by	0.1 A	
Absorptions (3.5 ÷ 8 V)		
Medium (50% dot ON)	3.3 A (3.5 V)	2.5 A (8 V)
Stand by	0.1 A	

Table 3.5 gives the electrical specifications for the PLUS II-USB.

(Tab.3.5)

ELECTRICAL CONDITIONS	
Power Supply	10 ÷ 32 V
Absorptions (10 V)	
Medium (50% dot ON)	2.5 A
Stand by	0.1 A
Absorptions (32 V)	
Medium (50% dot ON)	0.8 A
Stand by	0.1 A

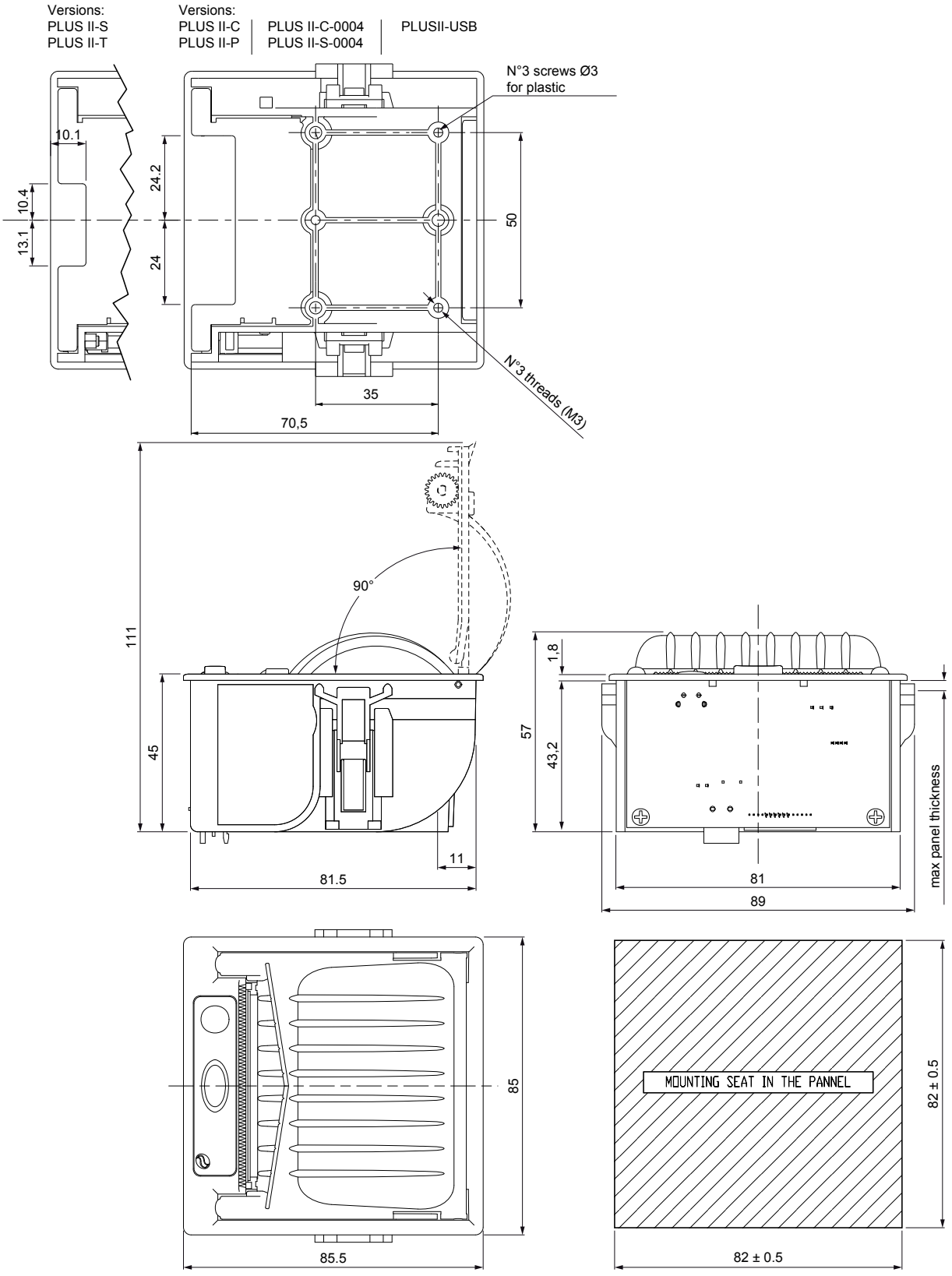
General note:
Codes description:

Code	Interfaces
PLUS II-S	Serial RS232
PLUS II-S-0004	Serial RS232 Extended range
PLUS II-T	Serial TTL
PLUS II-C	Parallel Centronics
PLUS II-C-0004	Parallel Centronics Extended range
PLUS II-P	Parallel TTL
PLUS II-USB	USB - Serial RS232

3.2 DIMENSIONS

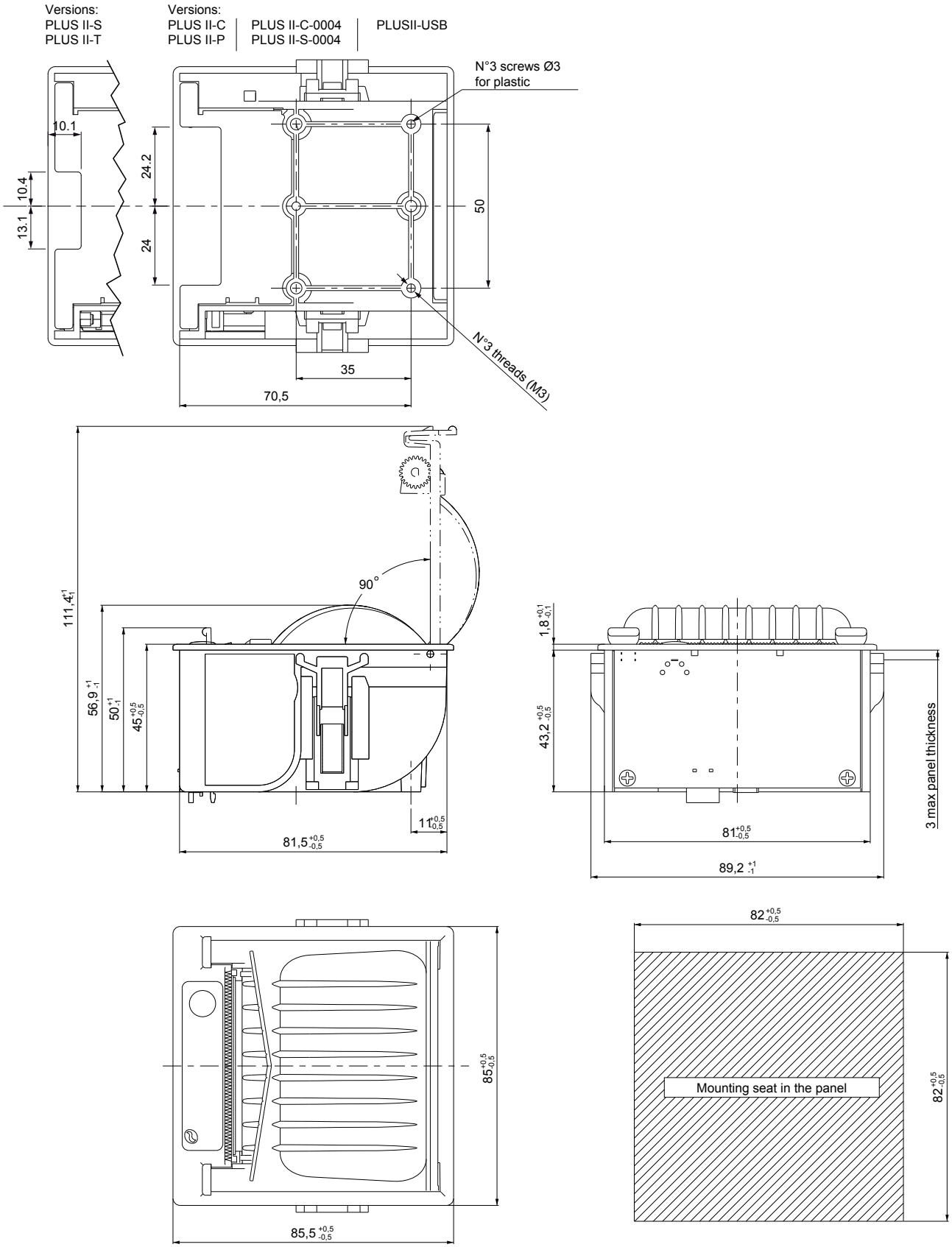
The fig 3.1 shows the dimensions for PLUS II.

(Fig.3.1)



The fig 3.2 shows the dimensions for PLUS II (OPTION -0128).

(Fig.3.2)

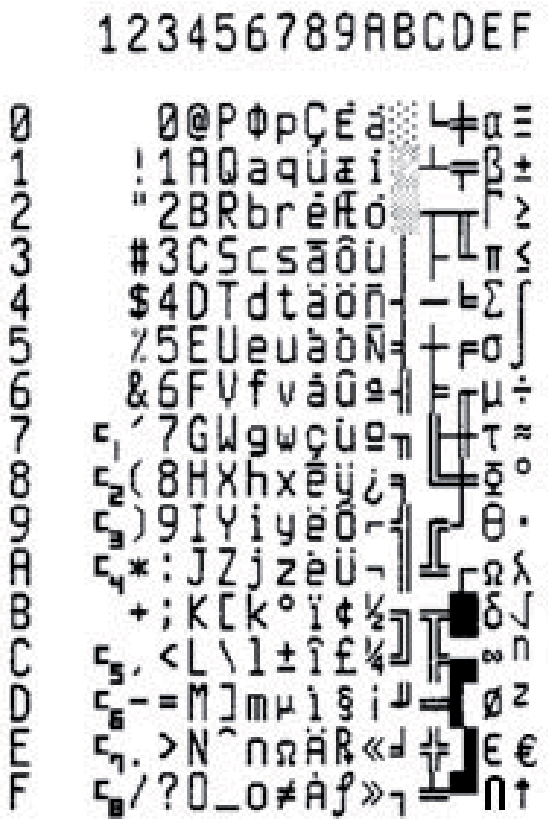


Blank page

4.1 CHARACTER SETS

4.1.1 Character sets for PLUS II-S, PLUS II-S, PLUS II-T, PLUS II-C, PLUS II-T

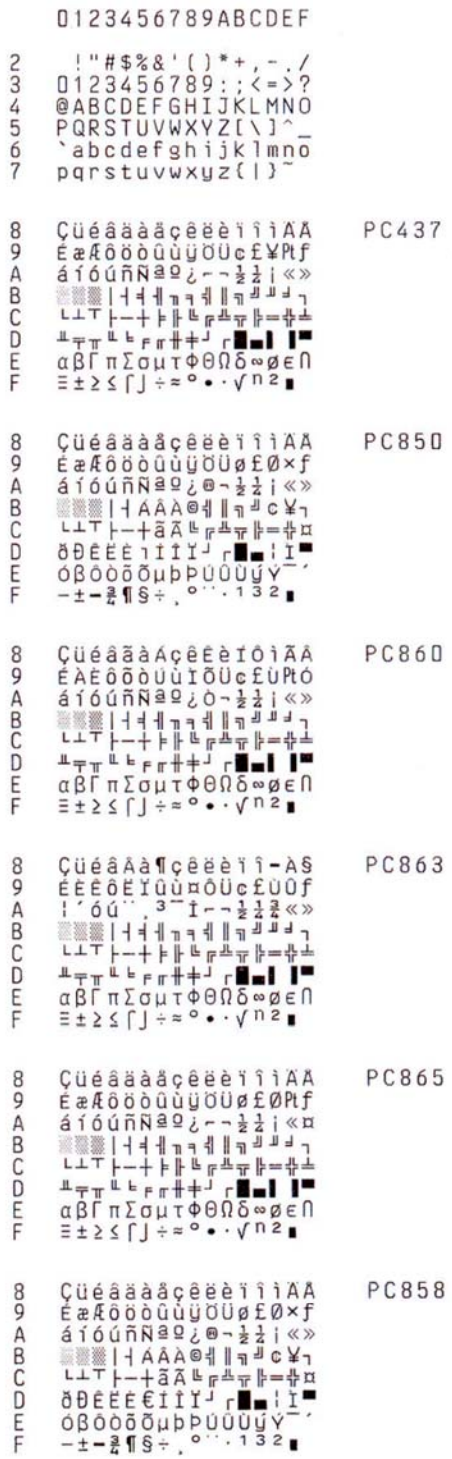
The printer has 2 fonts each width 224 characters (Font 1 and Font 2). Shown below in figure 4.1 is an example of Font 1.



(Fig.4.1)

4.1.2 Character sets for PLUS II-USB

The printer has 2 fonts of varying width (12, 17 and 22 cpi) which may be accessed through programming or control characters. Each of these fonts offers the following code tables: PC437, PC850, PC860, PC863, PC865, PC858.



PC437
(Usa,Standard,Europe)

PC850
(Multilingual)

PC860
(Portuguese)

PC863
(Canadian-French)

PC865
(Nordic)

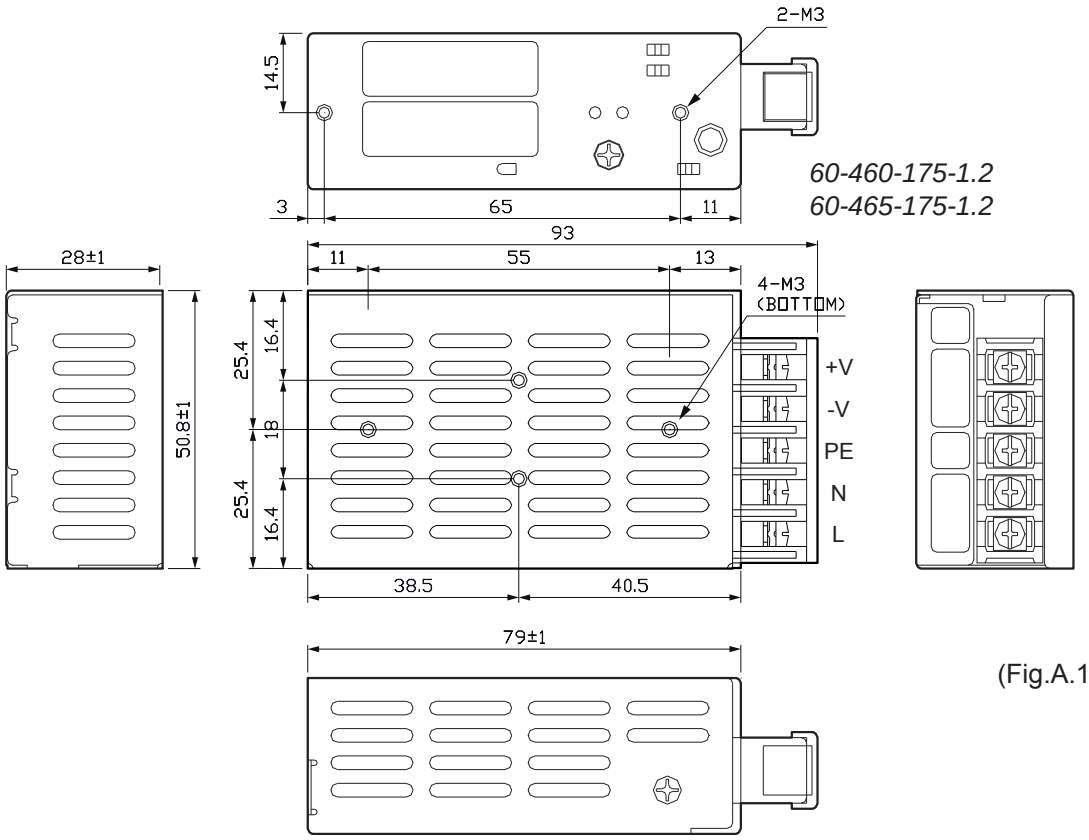
PC858
(Euro symbol)

(Fig.4.2)

A.1 ACCESSORIES

A.1.1 Power supply

The fig.A.1 illustrates the power supply provided by Custom to be used for printer operation of PLUS II-S, PLUS II-S-0004, PLUS II-T, PLUS II-C, PLUS II-C-0004, PLUS II-P. The tab.A.1 gives the main technical specifications for power supply.



(Fig.A.1)

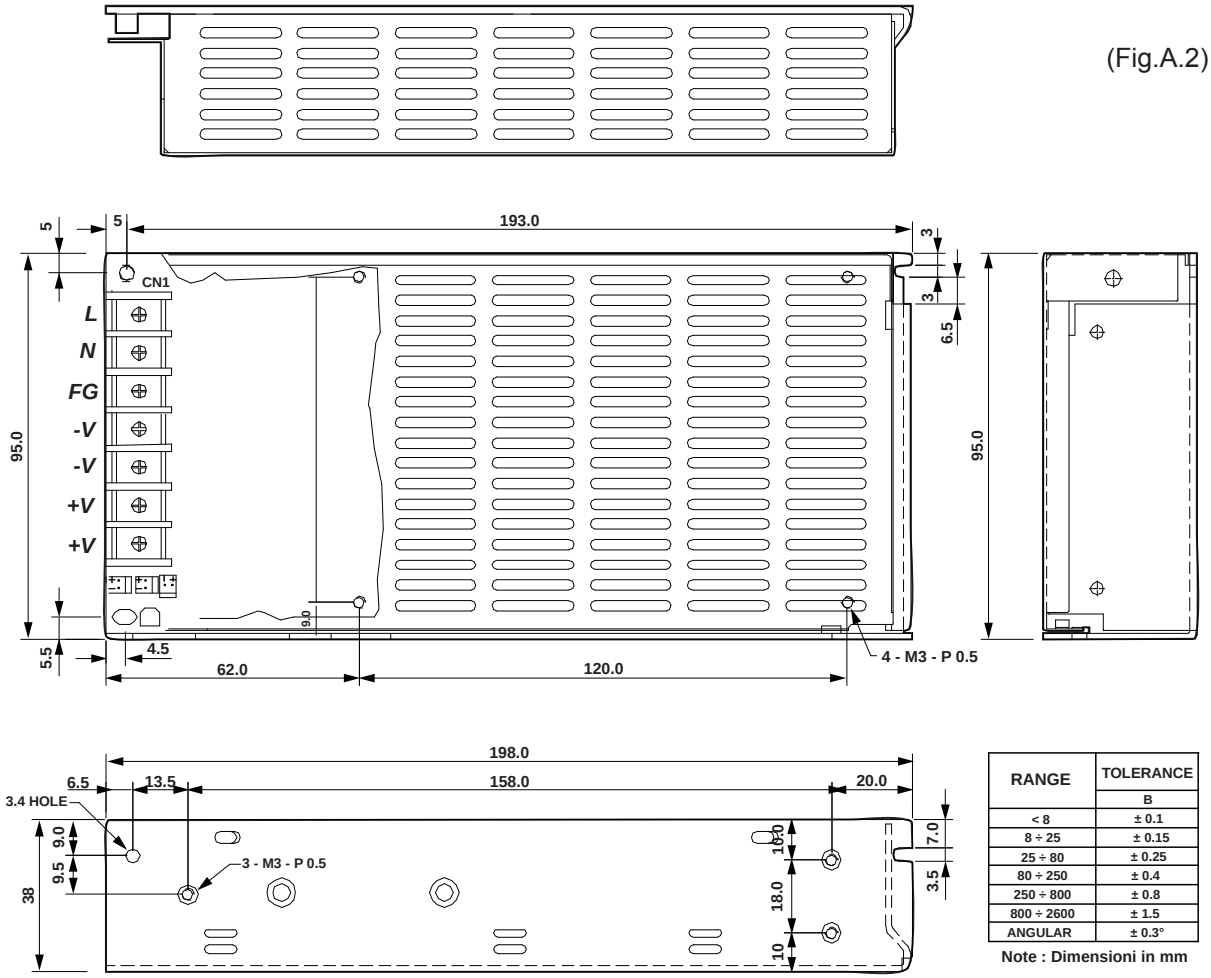
1. TERMINAL BLOCK: 5P, PITCH 7.62 mm WITH PC COVER
2. UNIT: mm

(Tab.A.1)

PPSPS-0025-05	**Switching power supply 5V 25W**
Input specifications	
Input voltage	AC: 85 ÷ 264 V DC: 120 ÷ 375 V
Current	0.8 A max at 100 V AC input
Input frequency	47 ÷ 63 Hz
Output specifications	
Output voltage	5 V
Output current min.-max.	5 A
Efficiency min.	72%
Environmental conditions	
Operating temperature	- 25 °C ÷ 70 °C
Humidity	20 ÷ 85 %
Storage temperature / Humidity	- 25 ÷ 75 °C / 10 ÷ 95 % Rh (w/o condensation)
Protection devices:	Short-circuit, overload and overvoltage.

The fig.A.2 illustrates the power supply provided by Custom to be used for printer operation of PLUS II-USB.
The tab.A.2 gives the main technical specifications for power supply.

(Fig.A.2)



RANGE	TOLERANCE B
< 8	± 0.1
8 ÷ 25	± 0.15
25 ÷ 80	± 0.25
80 ÷ 250	± 0.4
250 ÷ 800	± 0.8
800 ÷ 2600	± 1.5
ANGULAR	± 0.3°

Note : Dimensioni in mm

(Tab.A.2)

PPSPS-100-24	**Switching power supply 24V 100W**
Input specifications	
Input voltage	85 ÷ 264 V
Current	0 ÷ 4.5 A
Input frequency	47 ÷ 63 Hz
Output specifications	
Output voltage	24 V
Output current min.-max.	0 ÷ 4.5 A
Efficiency min.	80%
Environmental conditions	
Operating temperature	0 ÷ 70 °C
Humidity	20 ÷ 85 % Rh (w/o condensation)
Storage temperature / Humidity	-10 ÷ 85 °C / 10 ÷ 95 % Rh (w/o condensation)
Protection devices:	Short-circuit, overload

A.1.2 Adaptor frame kit 112X112

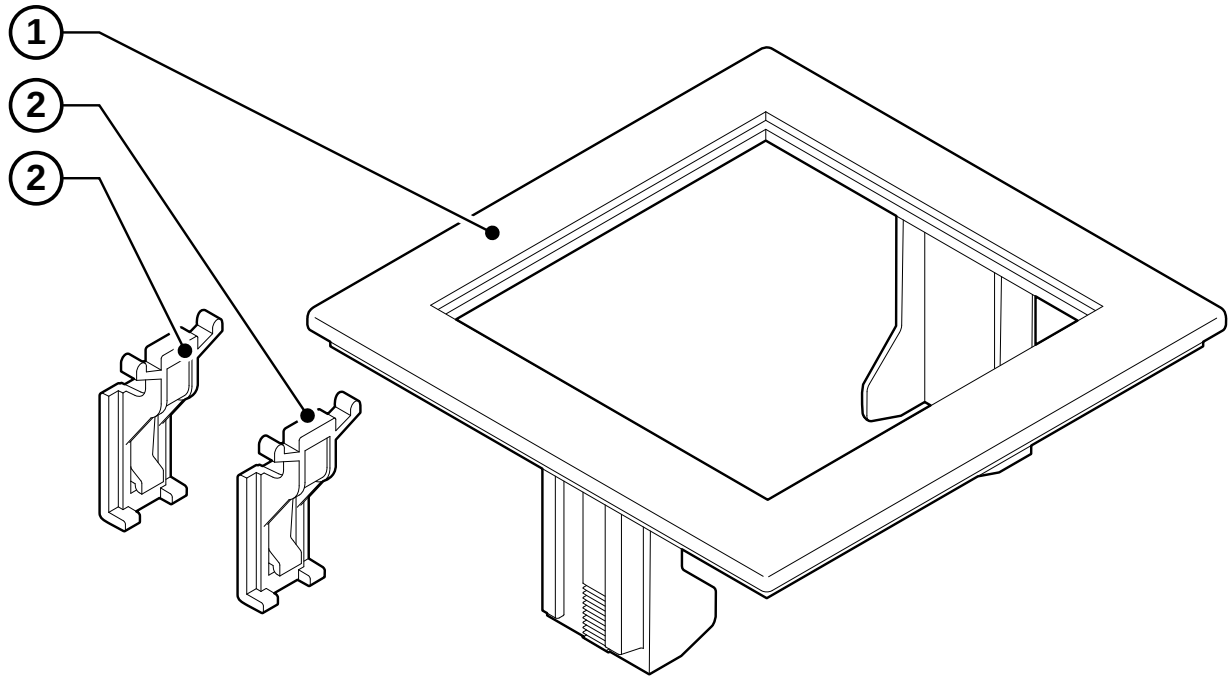
An adaptor frame is available for all the PLUS II models. It makes PLUS II mechanically compatible with CUSTOM F and P series panel printers (see fig. A.3).

PCXSP-PLUS-2	Grey adaptor frame with hooks
PCXSP-PLUS-4	Beige adaptor frame with hooks

The kit is composed of:

1. Adaptor frame (1)
2. N°2 Fixing hooks

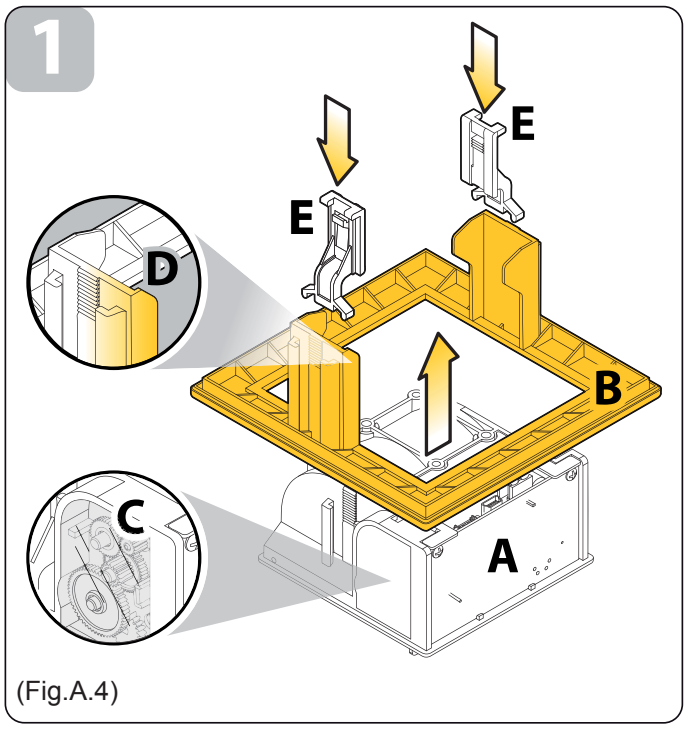
(Fig.A.3)



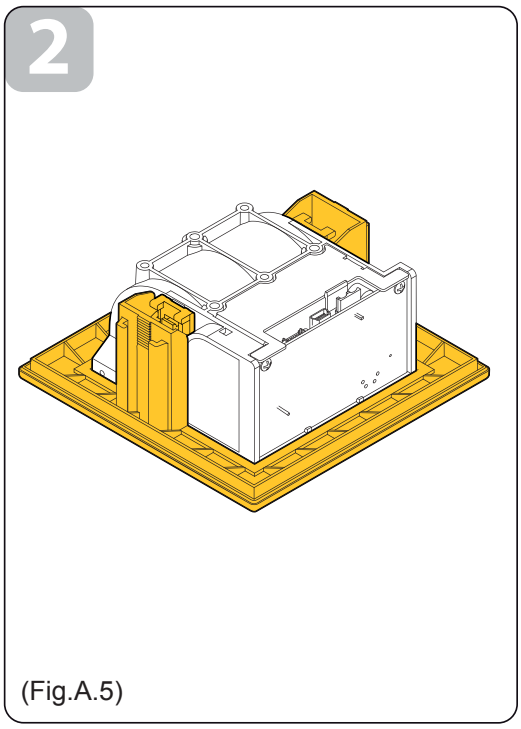
NOTE:
(1) Pay attention that the external frame, the cover and the printer frame are made from polypropylene, so it's better to keep away from: Ammonia, Methanol, Acetone, Washing-up liquid, Benzol, Dishwasher liquid, Hydrocarbon, Dichloromethane, Perchloretylene, Ethylene, Trichlorethylene, Toluene.

Assembling instructions

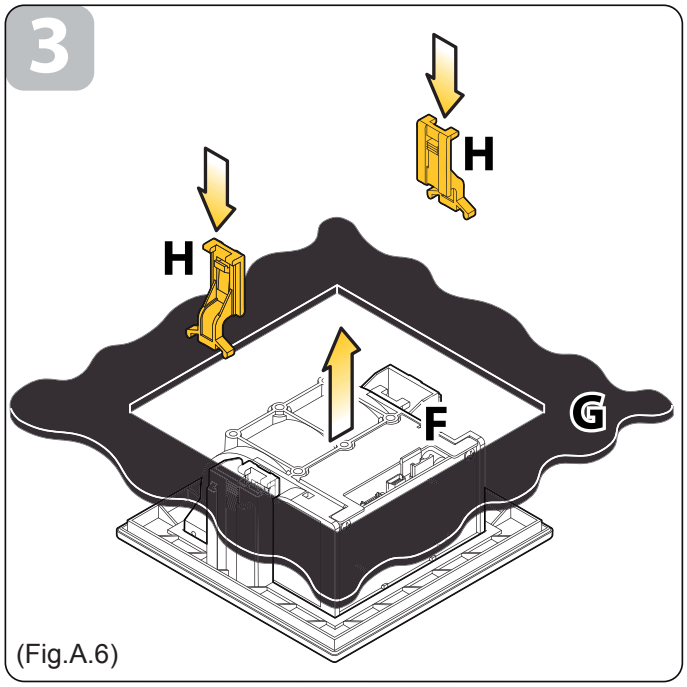
- Fit the printer (A) into the adaptor frame (B), making sure that the side of the printer with carter gears (C) is aligned with the hooking slide of the frame with the smoothed corner (D), not the side with two hooks. Fix the printer to the frame using the 2 hooks (E) included with the printer (see fig.A.4).
- The printer/frame unit is assembled (see fig.A.5).
- Fit the printer/frame unit (F) into the panel (G) and fix it using the 2 hooks (H), included in the assembling kit (see fig.A.6).
- The printer/frame unit is installed on panel (see fig.A.7).



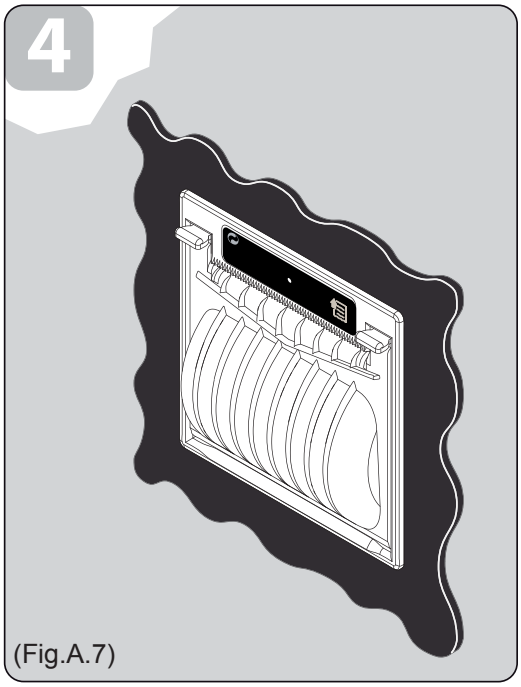
(Fig.A.4)



(Fig.A.5)



(Fig.A.6)

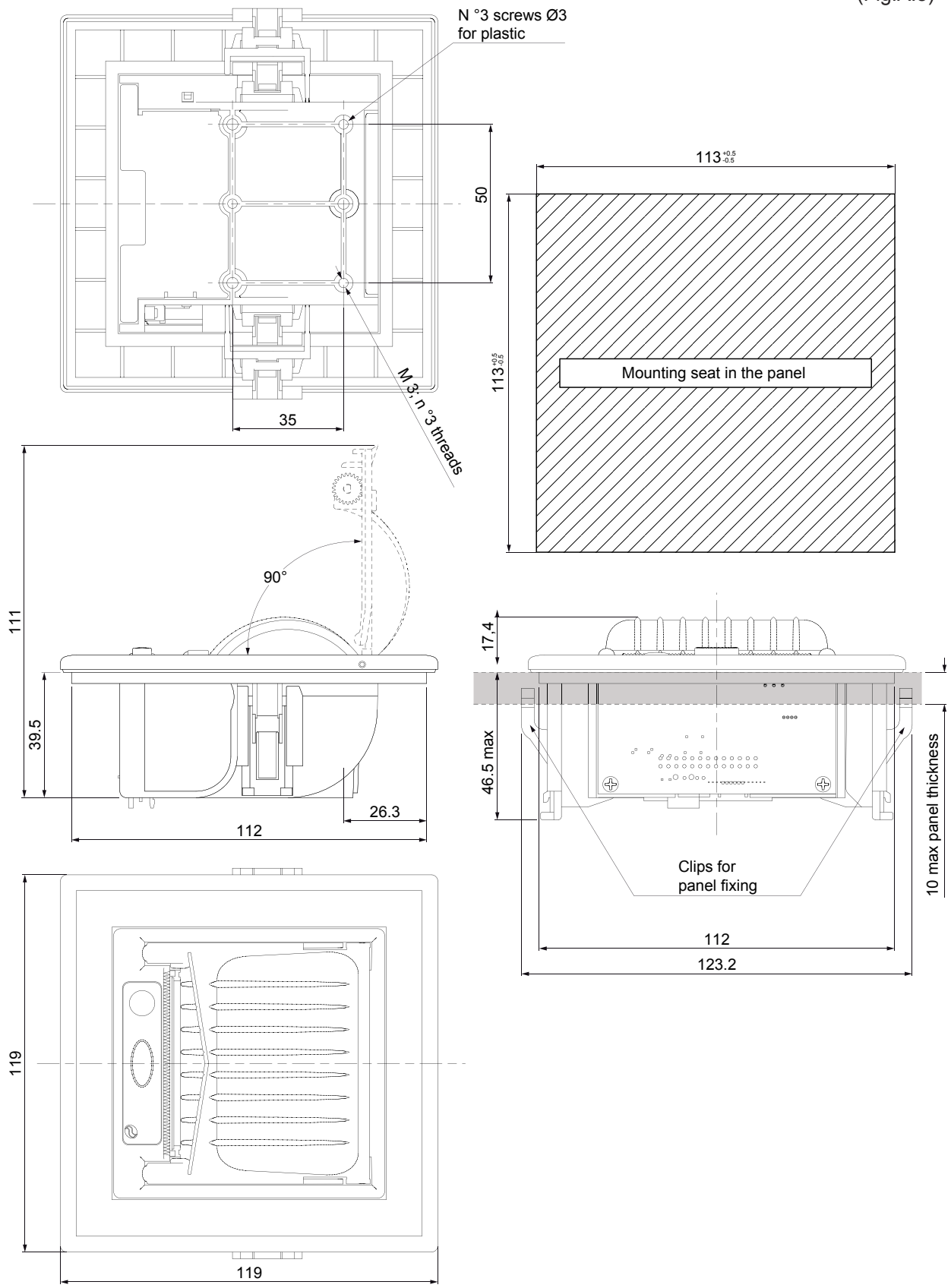


(Fig.A.7)

NOTE:
The mounting operations are valid for all the PLUS II models.

The fig.A.8 illustrates the dimensions of PLUS II models assembled with the frame.

(Fig.A.8)

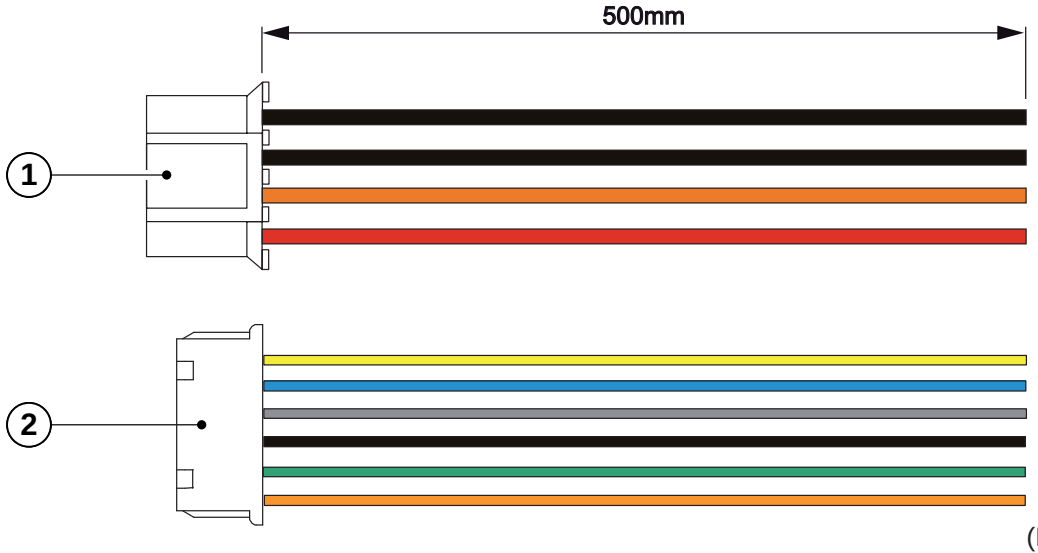


A.1.3 Data and power supply cables kit for PLUS II-S and PLUS II-T

The printer can be supplied with a data and power supply cables starter kit.

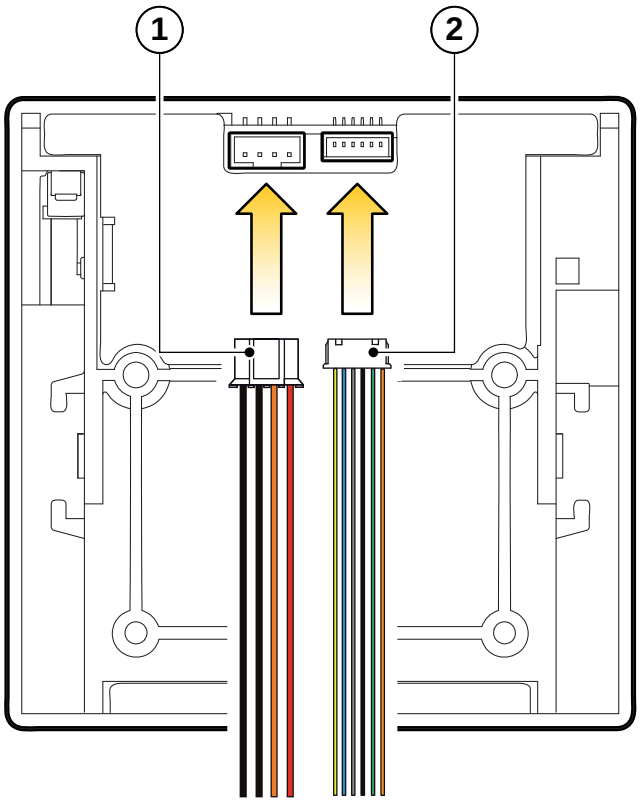
PCSKPLUS	Starter kit cables for PCPLUS-S

The kit includes (see fig.A.9):
1. Power supply cable.
2. Data cable for serial interface.



(Fig.A.9)

To connect the cable proceed as follows (see fig.A.10):
- Connect the power supply cable (1) to the power supply connector in the rear of the printer;
- Connect the data serial interface cable (2) to the interface connector in the rear of the printer.

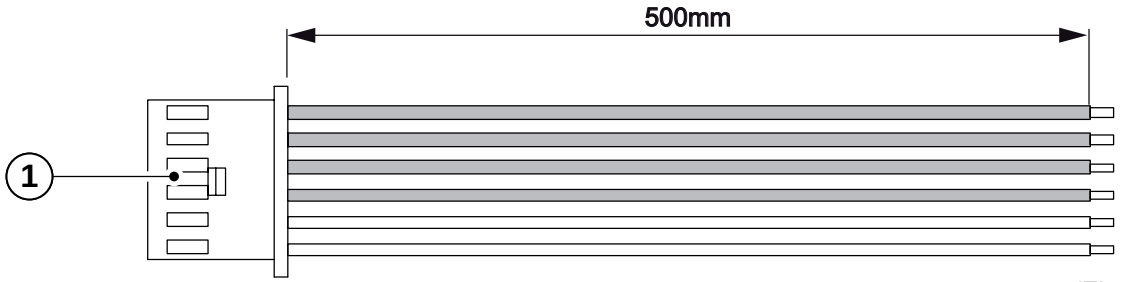


(Fig.A.10)

A.1.4 Data serial cable kit for PLUS II-S-0004

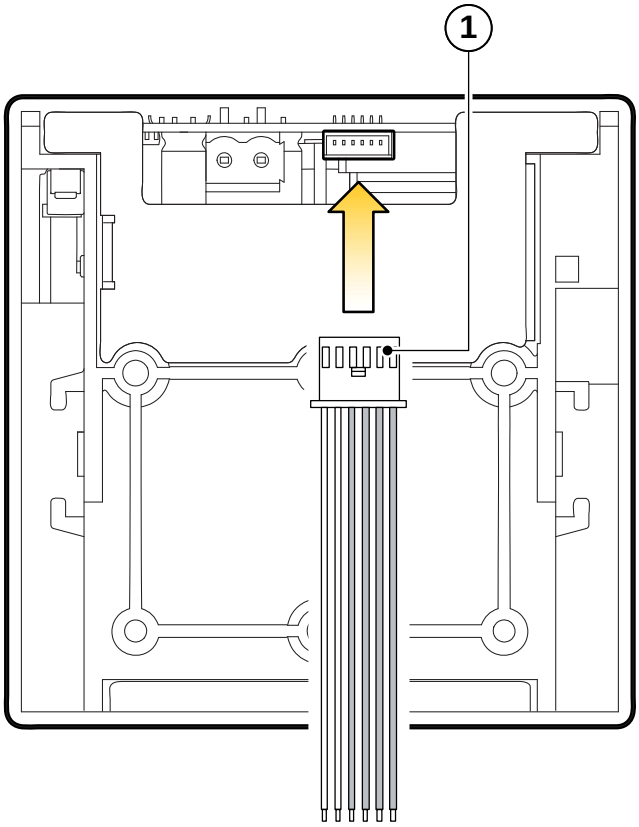
The printer can be supplied with a data serial cable (see fig.A.11).

PCSKPLUS-0004	Starter kit cables for PCPLUS-S-0004



(Fig.A.11)

Connect the data serial interface cable (1) to the interface connector in the rear of the printer (see fig.A.12):
.



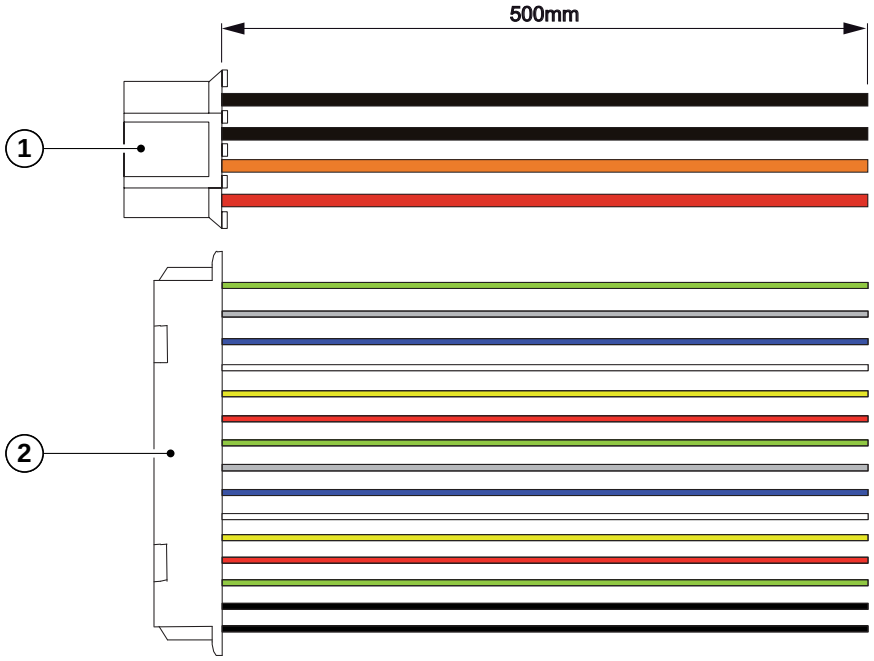
(Fig.A.12)

A.1.5 Data and power supply cables kit for PLUS II-C and PLUS II-P

The printer can be supplied with a data and power supply cables starter kit.

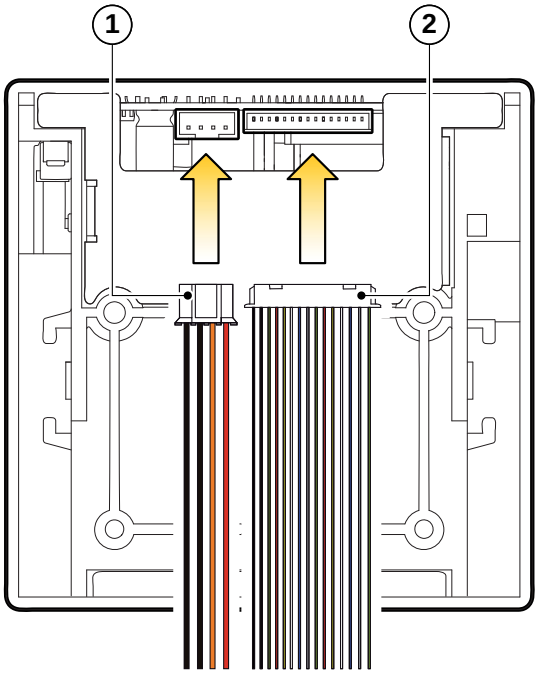
PCSKPLUS-C	Starter kit cables for serial PCPLUS-C and PCPLUS-P

The kit includes (see fig.A.13):
1. Power supply cable.
2. Data cable for parallel interface.



(Fig.A.13)

To connect the cable proceed as follows (see fig.A.14):
- Connect the power supply cable (1) to the power supply connector in the rear of the printer;
- Connect the data parallel interface cable (2) to the interface connector in the rear of the printer.

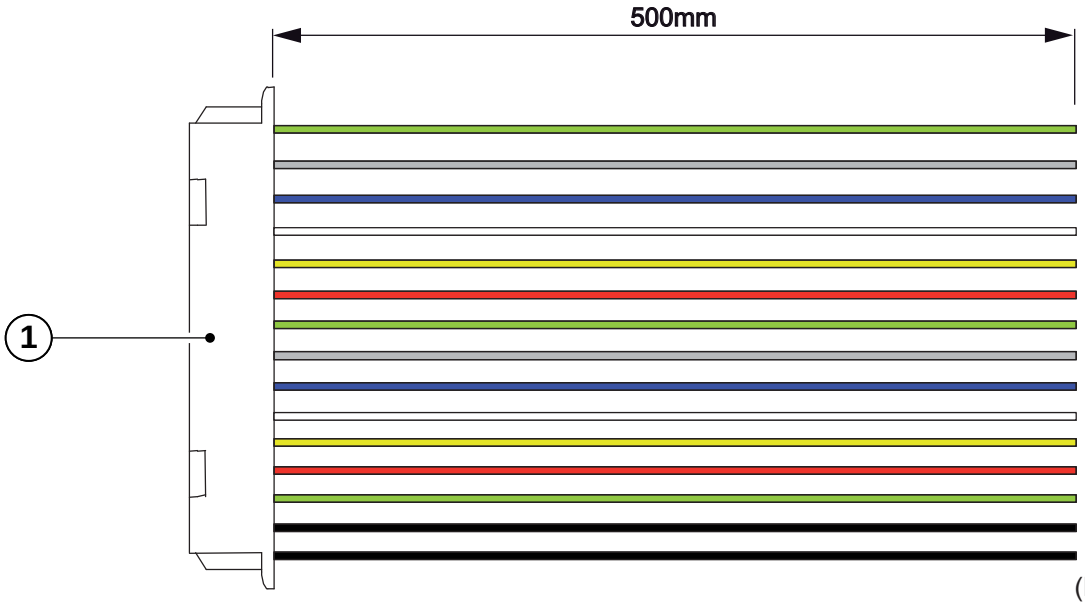


(Fig.A.14)

A.1.6 Data parallel cable kit for PLUS II-C-0004

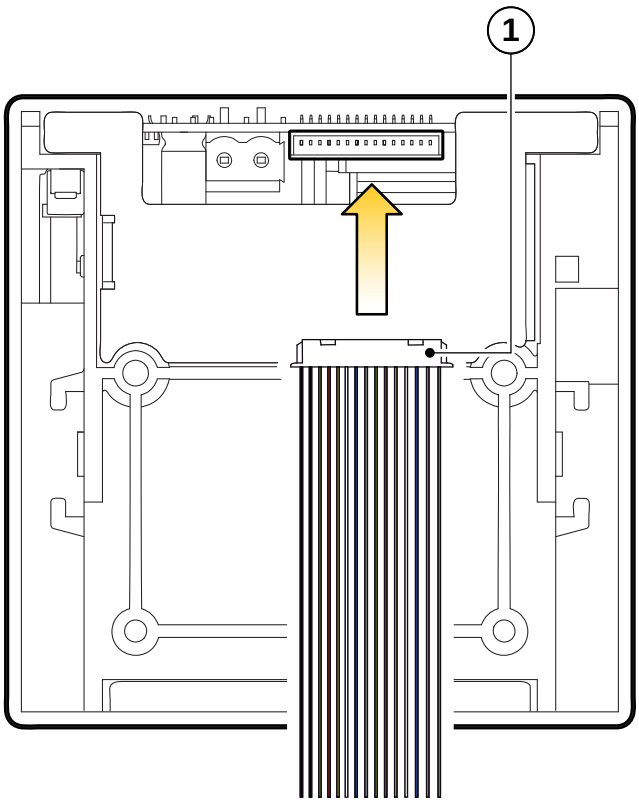
The printer can be supplied with a data parallel cable (see fig.A.15).

PCSKPLUS-C-0004	Starter kit cables for PCPLUS-C-0004



(Fig.A.15)

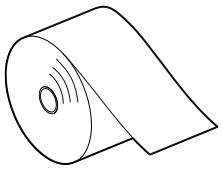
Connect the data parallel interface cable (1) to the interface connector in the rear of the printer (see fig.A.16):



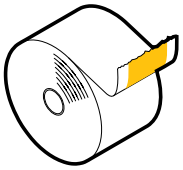
(Fig.A.16)

A.2 SPARE PARTS

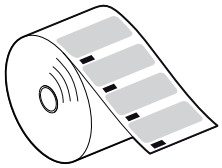
A.2.1 Supplies



RCT57X50				
Thermal paper roll 57mm d=50				
Quantity recommended per n° machines purchased				
N° machines	*<10*	*<50*	*<100*	*>100*
Quantities recommended	*5*	*30*	*60*	*90*



RCT57X50-18MM-LL				
Linerless paper roll L=57 Di=18 De=50				
Quantity recommended per n° machines purchased				
N° machines	*<10*	*<50*	*<100*	*>100*
Quantities recommended	*5*	*30*	*60*	*90*



RCT57X1E-25MM				
Label paper roll L=57 Di=25				
Quantity recommended per n° machines purchased				
N° machines	*<10*	*<50*	*<100*	*>100*
Quantities recommended	*5*	*30*	*60*	*90*

Part Number : DOME-PLUSII Rev. 1.25

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