USER MANUAL



TG2460H



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UNLESS OTHERWISE SPECIFIED, THE INFORMATION GIVEN IN THIS MANUAL

ARE REFERRED TO ALL MODELS IN PRODUCTION AT THE ISSUE DATE OF THIS DOCUMENT.

GENERAL SAFETY INFORMATION

Your attention is drawn to the following actions that could compromise the characteristics of the product:

- Read and retain the instructions which follow.
- Follow all indications and instructions given on the device.
- Make sure that the surface on which the device rests is stable. If it is not, the device could fall, seriously damaging it.
- Make sure that the device rests on a hard (non-padded) surface and that there is sufficient ventilation.
- When positioning the device, make sure cables do not get damaged.
- Use the type of electrical power supply indicated on the device label. If uncertain, contact your dealer.
- Make sure the electrical system that supplies power to the device is equipped with a ground wire and is protected by a differential switch.
- Do not block the ventilation openings.
- Do not insert objects inside the device as this could cause short-circuiting or damage components that could jeopardize printer functioning.
- Do not carry out repairs on the device yourself, except for the normal maintenance operations given in the user manual.
- Make sure that there is an easily-accessible outlet with a capacity of no less than 15A in the vicinity of where the device is to be installed.
- Periodically perform scheduled maintenance on the device to avoid dirt build-up that could compromise the correct, safe operation of the unit.
- Before any type of work is done on the machine, disconnect the power supply.
- Do not touch the head heating line with bare hands or metal objects. Do not perform any operation inside the printer immediately after printing because the head and motor tend to become very hot.

GENERAL INSTRUCTIONS

CUSTOM ENGINEERING S.p.A. declines all responsibility for accidents or damage to persons or property occurring as a result of tampering, structural or functional modifications, unsuitable or incorrect installations, environments not in keeping with the equipment's protection degree or with the required temperature and humidity conditions, failure to carry out maintenance and periodical inspections and poor repair work.

THE CE MARK AFFIXED TO THE PRODUCT CERTIFY THAT THE PRODUCT SAT-ISFIES THE BASIC SAFETY REQUIREMENTS.

The device is in conformity with the essential Electromagnetic Compatibility and Electric Safety requirements laid down in Directives 2006/95/CE and 2004/108/CE inasmuch as it was designed in conformity with the provisions laid down in the following Standards:

- EN 55022 Class B (Limits and methods of measurements of radio disturbance characteristics of Information Technology Equipment)
- EN 55024 (Information Technology Equipment – Immunity characteristics – Limits and methods of measurement)
- EN 60950 (Safety of information equipment including electrical business equipment)



GUIDELINES FOR THE DISPOSAL OF THE PRODUCT

The crossed-out rubbish bin logo means that used electrical and electronic products shall NOT be mixed with unsorted municipal waste. For more detailed information about recycling of this product, refer to the instructions of your country for the disposal of these products.

- Do not dispose of this equipment as miscellaneous solid municipal waste, but arrange to have it collected separately.
- The re-use or correct recycling of the electronic and electrical equipment (EEE) is important in order to protect the environment and the wellbeing of humans.
- In accordance with European Directive WEEE 2002/96/EC, special collection points are available to which to deliver waste electrical and electronic equipment and the equipment can also be handed over to a distributor at the moment of purchasing a new equivalent type.
- The public administration and producers of electrical and electronic equipment are involved in facilitating the processes of the re-use and recovery of waste electrical and electronic equipment through the organisation of collection activities and the use of appropriate planning arrangements.
- Unauthorised disposal of waste electrical and electronic equipment is punishable by law with the appropriate penalties. nalties.



PRINTER COMPONENTS

A. TG2460H-UA-0118 (model with cutter) - Front external view

- 1. Paper output
- Inspection cover
 Rubbed roller manual feed
- 4. Printer chassis
- 5. USB interface connector
- 6. Status led
- 7. Power supply connector
- 8. Serial interface connector
- 9. Printing mechanism
- 10. FEED key
- 11. PRINT key
- 12. Cutter





B. TG2460H-UN-0228 (model without cutter) - Front external view

- 1. Paper output
- 2. Inspection cover
- 3. Rubbed roller manual feed
- 4. Printer chassis
- 5. USB interface connector

- 6. Status led
 7. Power supply connector
 8. Serial interface connector
 9. Printing mechanism
- 10. FEED key
- 11. PRINT key





C. TG2460H (all models) - Rear view

- 1. Inspection cover
- 2. Paper output
- 3. Printing mechanism
- Connector for external near paper end sensor (OPTIONAL)
 Paper input





D. TG2460H (all models) - Internal view

- 1. Head temperature sensor (not visible to the user)
- 2. Paper presence sensor
- Connector for external near paper end sensor (OPTIONAL)
 Inspection cover open sensor
- 5. Notch sensor



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1 INTRODUCTION

1.1 DOCUMENT STRUCTURE

This document includes the following chapters:

- Chapter 1: Contains a general description of the printer
- Chapter 2: Contains the information required for correct printer installation and its proper use
- Chapter 3: Contains information on interface specifications
- Chapter 4: Contains technical specifications of the printer
- Chapter 5: Contains the character sets (fonts) used by the printer
- Appendix A: Contains information about accessories and spare parts for printer
- Appendix B : Contains the information for the alignment management of tickets

1.2 EXPLANATORY NOTES USED IN THIS MANUAL

NOTE:	Information or suggestions relative to the use of the printer.
ATTENTION:	Information required to guard against damaging the printer.
DANGER:	Information required to guard against operator injury or damage



1.3 UNPACKING THE PRINTER

Remove the printer from the box, taking care not to damage the packing materials which should be retained for future shipping/moving. Make sure all components listed below are present and not damaged. If any part is missing and/or damaged, contact customer service.

- 1. Installation instructions
- 2. Paper roll
- 3. Power supply cable
- 4. Printer
- 5. Foam packing shell
- 6. Box



- Open the printer packaging
- Take out the paper roll
- Take out the user manual and the installation instructions
- Take out the power supply cable
- Lift the protection packing shell and take out the printer.
- Keep the box packing materials in the event the printer must be transported/shipped in the future.



1.4 GENERAL FEATURES

Ultra compact thermal printer for dispensing 60 mm tickets width, easy to install (4 fastening holes and ticket presentation to user incorporated). Thanks to the exclusive anti-paper-jam system, the ticket will always be promptly dispensed to the user. Thanks to an innovative type of paper roll holding bracket, it is possible to accommodate up to 100 mm external diameter paper rolls, adapt the printer to the mechanical space requirements necessitated by the application (5 positions: upper, 45 degrees up, rear, 45 degrees low and lower) and manage the near paper end signal. It is equipped with a 203 dpi thermal print mechanism and it has both the serial RS232 and the USB interface.

1.5 KEY FUNCTIONS

The printer has an ABS casing and an inspection cover which opens to allow access to printing roller. Sideways the control panel is located and has a PRINT key (1), a FEED key (2) and status LED (3).



KEY	FUNCTION
PRINT	When the PRINT key is pressed, the printer performs a demo ticket with pre-set length.
FEED	When the FEED key is pressed, the printer advances the paper. During power-up, if the FEED key is held down, the printer the SETUP report. During the SETUP mode, fast pressing the FEED key it's possible to change the parameters value and to print the parameter current value; pressing the FEED key it's possible to pass to the next parameter till the end of the SETUP.
PRINT + FEED	When both the PRINT and the FEED keys are pressed during printer power up, the printer performs the FONT TEST.



1.6 STATUS LED FLASHES

The Status led displays printer hardware status. Given in the table below are the various LED signals and the corresponding printer status.

STATUS LED			DESCRIPTION			
0	-	OFF PRINTER OFF				
	Green	ON	PRINTER OFF : NO ERROR			
			RECOVERABLE ERROR			
		x 1	Receiving data			
		x 2	Print head over temperature			
		x 3	Paper end			
	x 4	Power supply voltage error				
	x 5	Reception error (parity, frame error, overrun error)				
		x 6	Comando interpretato non correttamente			
		x 7	Command reception time out			
		x 9	Paper jam			
		x 10	Near paper end ⁽¹⁾			
			UNRECOVERABLE ERROR			
	FLASHING Green	x 11	Cutter error ⁽²⁾			

NOTES:

⁽¹⁾: Using TG2460H without the paper roll holder support, the status led continues to blink with this kind of flashing in order to communicate the Near Paper End error.

⁽²⁾: Only for models with autocutter.



2 INSTALLATION AND USE

2.1 POWER SUPPLY



The printer is equipped with a 2 pin male molex connector series 5569 (Vertical), for the power supply. The connector pin configuration is as follows:

PIN	SIGNAL
1	+24V
2	GND

Model no. type:

Header : 90° Molex series 5569 (no. 39-30-1020) Housing : Molex series 5557 (no. 39-01-3022)

ATTENTION: Respect power supply polarity.



The following picture shows the power supply cable included in the printer packaging :



For the connector pin configuration of this cable refer to the table below:

PIN Female connector	Cable colour	Signal
Pin 1	RED	+24V
Pin 2	BLACK	GND

ATTENTION:

In some using conditions, we recommend the installation of a ferrite core on the power supply cable.



2.2 SETUP REPORT

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 until another key is pressed or characters are received through the printer communication port.

PRINTER	SE	TUP
PRINTER TYPE BOOT LOADER HEAD VOLTAGE [V] HEAD TEMP. [°C] CUT COUNTER POWERON COUNTER PAPER PRINT [cm]	= = = =	TG2460-H rel 1.06 23.06 36 273 176 11160
Printer Emul Baud Rate Data Length Parity Handshaking Busy Condition Autofeed USB Address N Print Mode Code Table Chars / inch Speed / Quality Print Width Notch Align Notch ThresH Notch Dist.mm Print Density		ESCPOS 115200 bps 8 bits/chr None Hardware RxFull CR Disabled 0 Normal PC437 A=11 B=15 cpi Normal 56 mm Enabled 0.75V +00.0 0 %
[Feed PUSH] Enter setup [Feed FAST PUSH] skip se	tup	



2.3 SELF-TEST

Printer operating status is indicated in the configuration print-out in which, next to the name of the components displayed, the following information is given:

PRINTER TYPE	is given the device model.
BOOT LOADER	is given the boot loader release.
HEAD VOLTAGE	is given the voltage of the head.
HEAD TEMPERATURE	is given the temperature of the head.
CUT COUNTER ⁽¹⁾	is given the number of cuts made.
POWER ON COUNTER	is givem the number of power-ups made.
PAPER PRINTED	is given the number of centimeters of paper printed.

2.4 CONFIGURATION

This printer permits the configuration of default parameters . The printer's configurable parameters are:

- Printer Emulation: ESCPOS^D, TG2460
- Baud Rate: 115200, 57600, 38400, 19200 ^D, 9600, 4800, 2400, 1200.
- Data length: 7, 8 ^D bits/car.
- **Parity**: None ^D, even, odd.
- Handshaking: XON/XOFF ^D, Hardware.
- Busy Condition ⁽²⁾: RXFull^D, OffLine/RXFull.
- Autofeed: CR disabled ^D, CR enabled.
- USB Address : 0 ^D, 1, 2, 3, 4, 5, 6, 7, 8, 9.
- **Print mode**: Normal ^D, Reverse.
- Code Table ⁽³⁾: PC437^D, PC850, PC860, PC863, PC865, PC858, PC866, VISCII, U.D.P.
- Chars / Line ⁽⁴⁾: A=32 B=42 cpi ^D, A=42 B=56 cpi, A=24 B=32 cpi.
- Chars / inch ⁽⁵⁾: A=11 B=15 cpi ^D, A=15 B=20 cpi, A=25 B=20 cpi.
- Speed/Quality: Normal ^D, High Speed.
- Print Width: 52 mm, 56 mm^D.
- Notch Alignment: Disabled ^D, Enabled.
- Notch Treshold ⁽⁴⁾: 0.75V, 1.00V, 1.25V^D, 1.50V, 1.75V, 2.00V, 2.25V.
- Notch Distance [mm x 10]^{(4) (5)}: 0^D, 1.
- Notch Distance [mm x 1]^{(4) (5)}: 0^D, 1, 2.
- Notch Distance [mm x .1]^{(4) (5)}: 0^D, 1, 2, 3, 4, 5, 6, 7, 8, 9.
- **Print Density:** -50%, -37%, -25%, -12%, 0%^D, +12%, +25%, +37%, +50%.

GENERAL NOTES:

The parameters marked with the symbol ^D represent the default values. Settings remain active even after the printer has been turned off.

NOTES:

- ⁽¹⁾: Only for models with auto-cutter.
- ⁽²⁾ : Parameter valid only with serial interface; using this parameter, it is possible to select whether the Busy signal is activated when the printer is both in Off Line status and the buffer is full, or only if the reception buffer is full.
- ⁽³⁾: This parameter is not displayed in the "Printer Setup" of TG2460H with Chinese font GB2312.
- ⁽⁴⁾: If the "Printer Emulation" parameter is set to "ESCPOS" this parameter doesn't appear in the "Printer Setup"
- ⁽⁵⁾: If the "Printer Emulation" parameter is set to "TG2460" this parameter doesn't appear in the "Printer Setup"
- ⁽⁶⁾: If the "Notch Alignment" parameter is disabled this parameter doesn't appear in the "Printer Setup"
- ⁽⁷⁾: The "Notch distance" parameter represents the distance in mm from the upper margin of the ticket to the black mark on ticket. For example, to set notch distance to 11 mm, modify the following parameters in order to obtain the desired values as indicated:

Notch Dist. [mm x 10]	: 1
Notch Dist. [mm x 1]	: 1
Notch Dist. [mm x .1]	: 0



The settings made are saved on the EEPROM (non volatile memory).

During the setup routine the printer prints out the setup report and will remain in standby until another key is pressed or characters are received through the printer communication port. After this, each time the PRINT key is pressed, the parameter is modified and its current value is printed. Once the required value has been obtained, press the FEED key to proceed to the next parameter, and so on. Once all the parameters have been run through, the printing of a message signals the end of the setting procedure.

2.5 HEXADECIMAL DUMP

This function is used to display the characters received from the communications port; the printer prints out both the hexadecimal code received as well as the corresponding ASCII code.

Once the autotest routine has finished, the printer enters Hexadecimal Dump mode. The printer remains in standby until a key is pressed or characters are received from the communications 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). Shown below is an example of a Hexadecimal Dump:

48	65	78	61	64	65	63	60	60	61	Hevadecima
70	05	70	01	0-	05	05	03	00	01	Пелацесіша
6C	20	64	75	6D	70	20	66	75	6E	l dump fun
63	74	69	6F	6E	20	30	31	32	33	ction 0123
34	35	36	37	38	39	61	62	63	64	456789abcd
65	66	67	68	69	6A	6B	6C	6D	6E	efghijklmn
6F	70	71	72	73	74	75	76	77	78	opqrstuvwx
79	7A									уz



2.6 PAPER SPECIFICATIONS

Printer manages ticket width of 60 mm; the printer can use ticket with notch.

2.6.1 Specifications for ticket with notch

The notch must be positioned on the non-heat sensitive side of the paper as shown in the following figure, that showing an example of paper with alignment notch.

Dimensions in mm:



2.7 MAINTENANCE

2.7.1 Changing the paper roll

To change the paper roll proceed as follows:

- 1. Insert the paper into the paper infeed opening so that it unrolls in the direction shown.
- 2. Wait for the paper to load automatically.



WARNING:

Before inserting the paper, make sure the cut is straight.



2.7.2 Open the printer

To open the printer rotate the inspection cover to the maximum opening position as shown in the following figure.



NOTE:

After each maintenance operation is recommended to check and remove possible scraps of paper.



2.7.3 Paper jam

In case of paper jam proceed as follows:

- Lift the inspection cover and remove possible scraps of paper.
 Rotate the rubbed roller anticlockwise to eject the paper out from the printing mechanism.





2.7.4 Printer cleaning

WARNING:

- First remove the mains plug from the wall socket.
- Do not touch the head heating line with bare hands or metal objects.
- Do not perform any operation inside the printer immediately after printing because the head and motor tend to become very hot.
- Do not let water or other liquids get inside the machine.

Outside cleaning

The user is responsible for cleaning the printer case. To clean the unit, use compressed air or a soft cloth. Do not use alcohol, solvents or stiff brushes.





Paper presence sensors cleaning

To clean the paper presence sensor wipe the sensors surface gently with a clean cloth soaked in isopropyl alcohol. Do not use solvents.





2.7.5 Note for installation in the upside down position

To install the printer in the upside down position proceed as follows:

- 1. Release the lower side of the spring for the inspection cover from the position A.
- 2. Place the lower side of the spring in the position B.

Be careful to move the upper side of the spring from the internal to the external groove on the pin of the inspection cover.



The printer is ready to be installed in the upside down position as shown in the following figure.



NOTE: The described operations are valid for all TG2460H models.



3 INTERFACES

3.1 RS232 SERIAL INTERFACE

The printer is equipped with a serial RS232 interface with a female RJ45 connector as shown in the following figure.



In the following table, the signals present on the connector are listed:

PIN	SIGNAL	IN/OUT	DESCRIPTION	
1	N.C.	-	Not connected.	
2	GND	-	Ground signal.	
3	TXD	OUT	Transmit data. Serial output (from Host).	
4	RXD	IN	Receive data. Serial output (towards Host).	
5	RTS	OUT	Clear to send. Ready to receive data (active at RS232 high level).	
6	N.C.	-	Not connected	
7	N.C.	-	Not connected	
8	N.C.	-	Not connected	

The diagrams below show a sample connection between printer and PC using a 8 pin male RJ45 connector and a 9 pin female connector:





3.2 USB INTERFACE



The printer is equipped with USB interface conform to USB 1.1 standards and have the following specifications:

- Communication speed equal to 12 Mbit/sec.
- Type of connector "Receptacle series B".

Refer to the table below for the connector pin signals and connection to a device:

PIN	SIGNAL	SIGNAL DESCRIPTION			
1	VBUS	N.C.			
2 D- Da		Data -			
3	D+	Data +			
4	GND Groung signal				
Shell Shield Cable shield		Cable shield			



4 TECHNICAL SPECIFICATIONS

4.1 HARDWARE SPECIFICATIONS

the following table gives the main technical specifications for the printer model.

GENERAL		
Sensors	Head temperature, paper jam, paper presence on output, notch presence external near paper end (optional).	
MTBF ⁽¹⁾	171 735 hours	
Noise level	61,6 dB	
Emulations	ESC/POS ^{™,} , TG2460	
Drivers ⁽²⁾	Windows [™] 2K, XP, VISTA (32/64bit), Windows 7 (32/64bit)	
INTERFACES		
RS232 serial connector (RJ45)	from 1200 to 115200 bps	
USB connector	USB 1.1= 12 Mbit/sec	
MEMORY SPECIFICATIONS		
Flash memory	1 Mbytes	
Receive buffer	2 Kbytes	
Graphic memory	2 logos (448 x 584 dots)	
PRINTER SPECIFICATIONS		
Resolution	203 DPI (8 dot/mm)	
Printing method	Thermal, fixed head (8 dot/mm)	
Head life	50 Km	
Printing mode	Straight, 180°	
Printing format	Height / width from 1 to 4, bold, reverse, underlined, italic	
Character fonts	TG2460H: PC437, PC850, PC860, PC863, PC865, PC858, PC866, VISCII, U.D.P. TG2460H (version with chinese font): PC437, PC850, PC860, PC863, PC865, PC858, GB2312	
Printable barcode	UPCA, UPCE, EAN13, EAN8, CODE39, ITF, CODABAR,CODE93, CODE128, CODE32	
Printing speed ⁽³⁾	High quality = 100 mm/sec High speed = 140 mm/sec	
PAPER SPECIFICATIONS		
Type of paper	Thermal rolls Heat-sensitive side on outside of roll	
Paper roll size	60 mm ± 0,5	
Paper weight	da 55 g/m² a 70 g/m²	
Recommended types of paper	KANZAN KF50 o KPO460, MITSUBISHI PG5041	
Paper thickness	60 μm ± 0,5 μm (for 55 g/m² paper type) 80 μm ± 0,6 μm (for 70 g/m² paper type)	
Paper end	Not attached to roll core	
External roll diameter	max Ø100 mm (with external paper holder support)	
Internal roll core diameter	13 mm	
Core type	Cardboard or plastic	
Minimum ticket length (2)	(model wit cutter) 30 mm (model without cutter) 90 mm	



CUTTER SPECIFICATIONS (4)		
Cutting method	Total	
Cutter reliability	1 000 000 cuts	
TG2460H ELECTRICAL SPECIFICATIONS		
Power supply	24 Vdc ± 10% (alimentatore esterno opzionale)	
Average ⁽³⁾	0,7 A	
Stand-by	0,05 A	
964GE010000335 POWER SUPPLY SPECIFICATIONS (OPTIONAL)		
Power supply voltage	from 90V to 264V	
Frequency	from 47Hz to 63Hz	
Current (output)	3,2 A max	
Power	75 W	
ENVIRONMENTAL CONDITIONS		
Operating temperature	from -20°C to +70°C	
Relative humidity	from 10% Rh to 85% Rh	
Storage temperature	from -20°C to +70°C	
Storage relative humidity	from 10% Rh to 90% Rh	

NOTES:

⁽¹⁾: Electronic board.

⁽²⁾ : For printer models with cutter the minimum ticket length is 3 cm.

For printer models without cutter the minimum ticket length is 9 cm, so in case of printing a page in length less than 9 cm, the printer automatically adjusts the length to 9 cm.

⁽³⁾: Referring to the standard CUSTOM receipt (L=10cm, Density = 12,5% dots on).

⁽⁴⁾: Only for model with cutter.

4.2 CHARACTER SPECIFICATIONS

ESC/POS [™] EMULATION				
Character set		3	3	
Character density	11 срі	15 cpi		20 cpi
Number of columns	24	32		44
Chars / sec	720	960		1320
Lines / sec	30	30		30
Characters (L x H mm)-Normal	2,2 x 3	1,7 x 3		1,2 x 3
TG2460 EMULATION				
Character set		2	1	
Number of columns	24	32	42	56
Chars / sec	720	960	1260	1680
Lines / sec	30	30	30	30
Characters (L x H mm)-Normal	2,2 x 3	1,7 x 3	1,25 x 3	1 x 3

NOTE:

Referred to the default paper width (56mm).



4.3 PRINTER DIMENSIONS

MECHANICAL SPECIFICATIONS OF TG2460H (model with cutter)		
Length	114,2 mm	
Width	134,5 mm	
Height	81,15 mm	
Weight (1)	0,625 Kg	

NOTE:

⁽¹⁾: Referred to model without paper roll.

The following figure shows the dimensions for TG2460H (model with cutter)









4. TECHNICAL SPECIFICATIONS

MECHANICAL SPECIFICATIONS OF TG2460H (model without cutter)		
Length	84,5 mm	
Width	142,5 mm	
Height	92 mm	
Weight (1)	0,500 Kg	

NOTE:

⁽¹⁾ : Referred to model without paper roll.

The following figure shows the dimensions for TG2460H (model without cutter)









5 CHARACTER SETS

The printer has 3 fonts of varying width (11, 15 and 20 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, PC866, VISCII.

In the following table are examples of the 11 cpi character set.



NOTE: To print the Euro (€) symbol, the command sequence is: \$1B \$74, \$13, \$D5 (see Command Reference).



The TG2460H version with Chinese font has the simplified font GB2312 characters set (about 7000) as shown in the following figure.





With this version must be send two bytes to addressing characters: the first byte identifies the table, the second byte identifies the row and column in the table. In the following figure is reported an example of characters mapping; the X symbol identifies the character to address.

1st byte

Range: $161 \le n \le 169$ (A1 ÷ A9), $176 \le n \le 247$ (B0 ÷ F7),

2nd byte

Range: $160 \le m \le 255$ (A0 ÷ FF).







6 TECHNICAL SERVICE

In case of failure, contact the Technical Service by sending an e-mail to support@custom.it detailing:

- 1. Product code
- 2. Serial number
- 3. Hardware release
- 4. Firmware release

To get the necessary data, proceed as follows:









A. CONSUMABLES AND ACCESSORIES

A.1 CONSUMABLES

The following table shows the list of available consumables for device:

DESCRIPTION

CODE

6730000000362

THERMAL PAPER ROLL

width = 60mm Øexternal = 80mm Øcore = 12mm





A.2 ACCESSORIES

A.2.1 Power supply

The following figure illustrates the power supply provided by Custom to be used for printer operation.

Dimensions in mm:



964GE010000335

Switching power supply 24V 75W (see technical specifications)



A.2.2 Adjustable paper holder support kit

For the device is available an external paper roll holder kit supplied as an accessory. The kit makes it possible to use paper rolls with larger diameter (Øext.100mm max).

974CE010000309 Paper holder support kit with near paper end sensor

The kit includes:

- 1. One fastening screw for the paper roll pin to paper holder support
- 2. Paper roll pin
- 3. Two disks for the paper roll containment
- 4. Three fastening screws for the paper holder support to the printer frame (M3x5)
- 5. Paper holder support (with cable and near paper end sensor board assembled)
- 6. Two plastic ties for fastening the cable to the printer





Assembling instructions

1. Fix the paper roll pin to the holder support by the one fastening screw on issue in the kit.

Be sure that the paper roll pin is assembled with the bevelled side turned in the low position (in order to matches the paper roll containment disks).



The paper roll holder support fastening is possible on both sides of the printer. The assembly isn't fixed but adjustable on 5 different positions on the left side (upper P1, 45 degrees up P2, rear P3, 45 degrees low P4 and lower P5). On the right side of the printer, the assembly positions P4 and P5 are not possible because of interference with control panel. To fastening the paper roll holder support proceed as follows:

- 1. Move the paper roll holder support until three of the radial holes coincide with the three holes on the printer body.
- 2. Fasten the paper roll holder support with the printer body by the three M3x5 fastening screws supplied.
- 3. Connect the near paper end sensor cable to the connector on the left side of the printer.













Using the paper roll containment disks

The paper holder support kit is equipped with two paper roll containment disks. The disks operates to keep the roll paper in the right position. They are realized with holes, which let the near paper end sensor on the paper holder support works correctly, and with a slot, which hinder the disks from rotating around the paper roll pin. The following figure shows the assembly instruction for the paper roll containment disks on the paper roll pin.



NOTE: The assembling operations are valid for all TG2460H models.



The following figure shows the dimensions for TG2460H (model with cutter) with paper holder support.





158 91 **Ø** max = 100 37.5 2.2 ◙ ◎ 127[°] 0 \oplus 137 ′⊕ 0 $\langle \circ \rangle$ 18.7 109 E () ଅଚିତ 8 0 Ð Φ_0^{\prime} ø 0 8 48.7 42 6.2 25 53 oþ 91 158 171

The following figure shows the dimensions for TG2460H (model without cutter) with paper holder support.





B. TICKET ALIGNMENT

Paper with an alignment notch can be used in order to handle tickets with pre-printed fields and a fixed length. To guarantee the alignment is necessary that the *"Notch Alignment"* parameter is enabled from the key setup (see setting configuration parameters), that the alignment sensor is calibrated and that the parameters are set. The calibration of the sensor occurs automatically within the printer setup.

B.1 ENABLING, CALIBRATING AND SETTING PARAMETERS

The notch sensor is a reflection sensor that emits a band of light and detects the quantity of light reflected to it. The presence of the notch is therefore detected by the amount of light that returns to the sensor, taking into account that the light is reflected by the white paper and absorbed by the black mark.

Calibration of the sensor occurs automatically and consists in adjusting the quantity of light emitted to adapt it to the degree of whiteness of the paper used.

To start self-calibration, is necessary that the "Notch Alignment" parameter is enabled during the printer setup (see setting configuration parameters) :

Notch Align. : Enabled

The printer will perform some paper FEEDS, at the end of which it will print the calibraration result and the value of the PWM duty-cycle of the alignment sensor driver so that it can be perform an optimal notch detection, for example:

Autoset Notch: OKPWM Duty cycle: 37%

The "Autosetting Notch" parameter indicates the operating condition of the self-calibration process; OK will appear if it has been successful, but if it has failed the words NOT OK will appear.

Another parameter that needs to be set is the threshold:

Notch ThresH. : 0.75V

It is used to detect the presence of the notch: if the voltage value read by the sensor exceeds the threshold value set the notch is identified, otherwise the white paper is considered.

In order to better identify the optimum threshold for the paper being used, a paper characterization function is also available in setup.

Charact Paper. : Yes

By activating this parameter the outgoing voltage of the sensor will be presented in a graphic form as shown in the following figure.



PAPER CHARACTERIZATION



The graphic shows the outgoing voltage of the sensor and the threshold value previously set. It is clear that by adjusting the threshold value it is possible to find the best position that takes into account the signal peak and the small oscillations around zero.

The ALIGNMENT POINT is defined as the position inside the ticket that is the desired alignment point.

The ALIGNMENT POINT can be defined over the notch or near this one; for this reason, the final parameters to be set in setup are:

Notch Dist. [mm x 10] . : 1 Notch Dist. [mm x 1] . : 1 Notch Dist. [mm x .1] . : 0

These parameters define the "Nocth Distance" that represents the distance from the notch to align or simply identify the notch distance from the ticket margin; in the above example the notch distance is 11 mm.

The following figure shows how the "Notch Distance" parameter represents the distance that exists between the notch and the desired alignment point. This parameter can have a minimum value of 0 mm (in this case the alignment point coincides with the edge on the notch) and a maximum of 12 mm. In reality the maximum distance corresponds to the mechanical distance between the notch sensor and the head, and it is for this reason that higher values and negative values are not permitted.





B.2 COMMANDS

B.2.1 Ticket alignment

Two alignment commands are available for TG2460H: **\$1D \$F6** e **\$1D \$F8**.

The command **\$1D \$F6** performs an alignment to the print head: the paper is fed through until the print head is at the ticket start.

The command **\$1D \$F8** performs an alignment to the cut: the paper is fed through until the cutter (or until the jagged blade, depending on the printer model) is at the set alignment point of the next ticket, so that a subsequent cut will occur precisely at the end of the ticket.

B.2.2 Setting the alignment distance

The "Notch Distance" parameter can be changed by the printer setup or by using the command **\$1D \$E7**. For further information refer to the command itself.

B.2.3 Examples

NOTE: To a better comprehension, in the following figures, the Notch is indicated on the same side of the printing text.

Example 1

To print a ticket's sequence witch the cut is made over the notch it's necessary set the notch distance to zero as follows (this setting have effect after the ticket already in the printer):

TG2460H (model with cutter)

{Set Notch Distance} \$1D,\$E7,\$00,\$00, TICKET Ν FIRST LINE {*Print text*} SECOND LINE 'TICKET 1',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A, {Cut alignment} \$1D,\$F8, {Cut} ESC,'i', TICKET (N+1) {Print text} FIRST LINE 'TICKET N',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A, SECOND LINE {Cut alignment} \$1D,\$F8, {Cut} ESC,'i',



{Set Notch Distance} \$1D,\$E7,\$00,\$00,

{Print text} 'TICKET 1',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A, {Presentation mode} \$1D,\$F8, {Manual tear off}

TICKET	N
FIRST	LINE
SECOND	LINE

{Print text} 'TICKET N',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A, {Presentation mode} \$1D,\$F8, {Manual tear off}

TICKET	(N+1)
FIRST	LINE
SECOND	LINE

Example 2

To cut 10mm before the notch the command sequence is (this setting have effect after the ticket already in the printer):

TG2460H (model with cutter)

\$1D, \$E7, \$00, \$0A,

{*Print text*} 'TICKET 1',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A {*Cut alignment*} \$1D, \$F8, {*Cut*} ESC,'i', ...



{Print text} 'TICKET 1',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A {Cut alignment} \$1D,\$F8, {Cut} ESC,'i', ...



\$1D, \$E7, \$00, \$0A,

{*Print text*} 'TICKET 1',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A {*Presentation mode*} \$1D, \$F8, {*Manual tear off*}



{*Print text*} 'TICKET 1',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A {*Presentation mode*} \$1D,\$F8, {*Manual tear off*} ...

Esempio 3

To print over the notch the command sequence is (this setting have effect after the ticket already in the printer):

TG2460H (model with cutter)

{Set Notch Distance} \$1D,\$E7,\$00,\$00,

{Print head alignment} \$1D, \$F6, {Print text} 'TICKET 1',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A {Cut} ESC,'i' TICKET N FIRST LINE SECOND LINE

{Print head alignment} \$1D, \$F6, {Print text} 'TICKET N',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A {Cut} ESC,'i'



{Set Notch Distance} \$1D,\$E7,\$00,\$00,

{Print head alignment} \$1D, \$F6, {Print text} 'TICKET 1',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A {Manual t ear off}



{Print head alignment} \$1D, \$F6, {Print text} 'TICKET N',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A {Manual tear off}

TICKET FIRST SECOND	(N+1) LINE LINE	
		~~~

#### Esempio 4.

To print 11 mm before the notch the command sequence is (this setting have effect after the ticket already in the printer):

#### TG2460H (model with cutter)

{Set Notch Distance} \$1D,\$E7,\$00,\$0F,

{Print head aligment} \$1D, \$F6, {Print text} 'TICKET 1',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A {Cut} ESC,'i' ...



{Print head aligment} \$1D, \$F6, {Print text} 'TICKET N',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A {Cut} ESC,'i'



{Set Notch Distance} \$1D,\$E7,\$00,\$0F,

{Print head aligment} \$1D, \$F6, {Print text} 'TICKET 1',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A {Manual tear off} ...



{Print head aligment} \$1D, \$F6, {Print text} 'TICKET N',\$0A,'FIRST LINE',\$0A,'SECOND LINE',\$0A {Manual tear off}



# **B.3 MECHANICAL CHARACTERISTICS**

### **B.3.1 Position of sensors**

The following figure shows a section of the printer and the distances between the printing head (C), the cutter (A) or the jagged blade (B) for models without auto-cutter and the notch sensor (D). The distances on paper between the points indicated in the following figure will be exceeding because of the paper path (E) inside the printer.



# **B.3.2 Ticket Dimensions**

It is very important to well calibrate the height of the printer area, according to the distance between the two edges of the notch. In order not to miss a notch (a ticket must therefore contain only one notch) the following equation must be respected:

```
INTER-NOTCH DISTANCE > PRINTED AREA HEIGHT + NON-PRINTABLE AREA
```

where

INTER-NOTCH DISTANCE = the distance between two notch edges NON-PRINTABLE AREA = cutter - printing head distance

The following picture shows a sequence of tickets aligning each one at the cut. It can be noted that increasing the printed area will result in superimposing what is to be printed at the subsequent notch. The size of the print area can be enlarged until it renders the alignment feed void, but not beyond.

It is important not to forget the non-printable area that is the distance between cutter and printing head.

#### LEGEND:

- A = Alignment feed H = Printing area height
- **B** = Non-printable area (CUTTER-HEAD)





# **B.4 METHOD OF USAGE**

# **B.4.1 Command sequence**

It is possible, when printing sequences of tickets, to primarily identify two different methods of operation that involve the alignment: ticket aligned at the cut and ticket aligned at printing.

Another very important aspect to bear in mind is the condition from which printing commences. In figure B.12, that shows a ticket aligned at the cut, it can be seen how every time a ticket printing begins this originates from an alignment at the cut, and therefore the distance between the start of the print area and the alignment line is equal to the head-cutter distance. The same situation applies to an alignment at printing.

## B.4.1.1 Alignment at the cut

The sequence of commands to be entered when wanting to align a ticket at the cut is as follows:

- 1. Ticket general setting; formatting of characters, print density, margins etc.
- 2. Print ticket: printing of text, logos or any other graphics.
- 3. Alignment at the cut command: \$1D \$F8
- 4. Cut command

The result is shown in the following figure.



It is possible to see how the start of the ticket print area is not aligned, but the print starts in the rest position that the head took up at the moment the previous ticket was cut. At the end of the print area the printer has fed the paper through to align itself and perform the cut at the desired position.





# **B.4.1.2 Alignment at printing**

Alignment at printing requires the following sequence of commands:

- 1. Ticket general setting; formatting of characters, print density, margins etc.
- 2. Print alignment commands: \$1D \$F6
- 3. Print ticket: Printing of text, logos or any other graphics.
- 4. Cut commands.

The result is shown in the following figure.



Unlike the previous case, the alignment feed takes place before the start of printing, so as to align the print area in the position required.









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