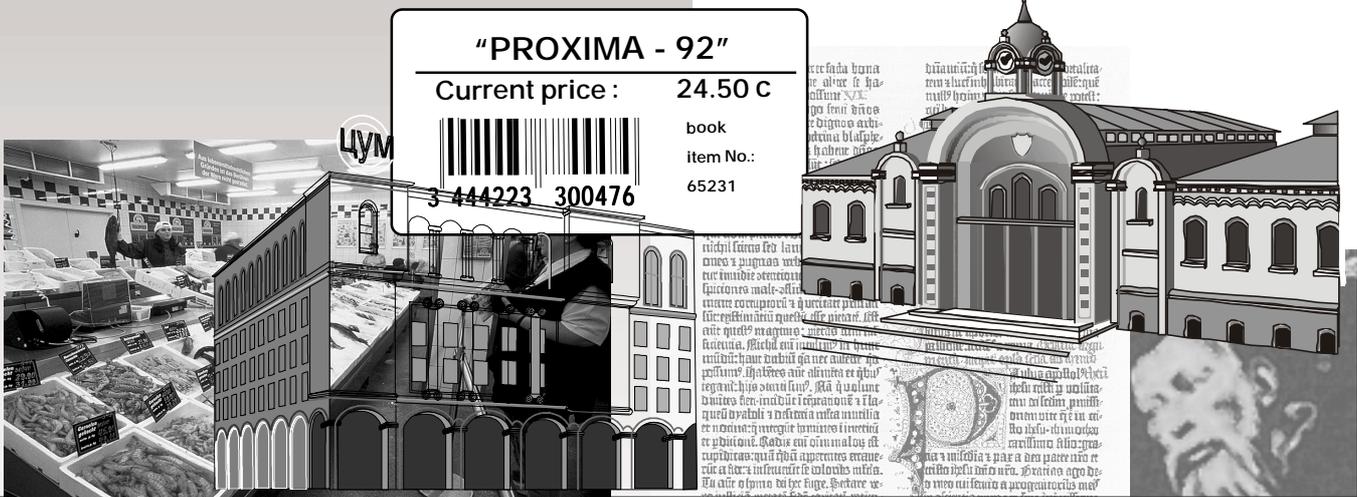


1 DATECS

LP-1000

LABEL PRINTER

USER'S MANUAL



PLEASE READ THIS MANUAL CAREFULLY BEFORE STARTING WORK

DATECS- LP1000

Data on the Printer

Date of purchase:.....

Manufacturer's serial number:.....

Service maintenance

Servicing company:.....

Address:.....

phones:.....

Working hours: from.....to.....

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1. BASIC RULES FOR OPERATING THE LD-1000



FOLLOW INSTRUCTIONS CLOSELY



MAY CAUSE DAMAGE TO THE UNIT

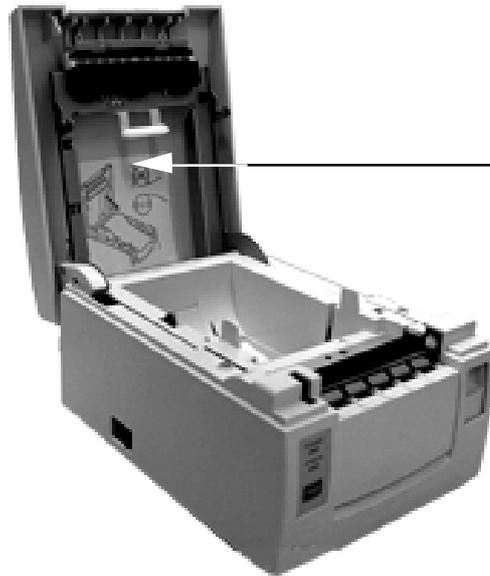
-  The LP-5000 is operated **ONLY** with its own power-feed adapter.
-  Attempts to print on other types of paper, stickers, folio not specified as acceptable in the present **MANUAL** may seriously damage your printer.
-  When changing the paper roll be carefull not to let any pins, paper clips or other hard objects fall inside the printing mechanism.
-  Do not spill liquids of any kind on the device.
-  Print only on specified thermal paper-rolls.
-  Don't force paper out from the printing mechanism.
-  Should the printer behave unusually during operation immediately turn off the cash register!
-  Printer repairs are performed only by service technicians. Do not attempt to repair the unit yourself.



ATTENTION! The printer operates with paper rolls with sizes:

- roll with labels: width 58 mm or 80 mm
- maximum diameter of roll: 83 mm

The printer may be cleaned with a dry and when needed, with a slightly moist (use water) cloth. Do not use benzine-based or other such chemicals to clean the printer.

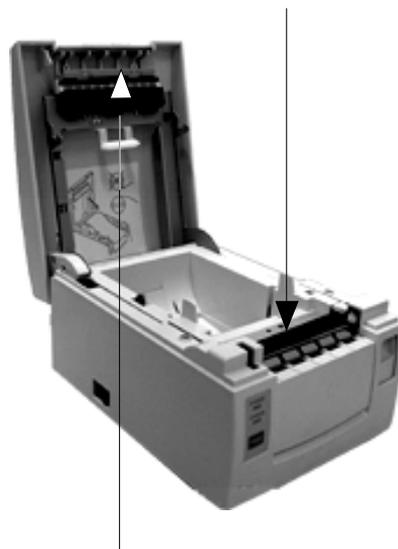


Do not touch -
high temperature area!

Do not touch the printer mechanism when the device is switched ON!

DAILY MAINTENANCE RULES

Daily cleaning of the paper-feed *roller mechanism* is desirable. Use a piece of soft, dry cloth.

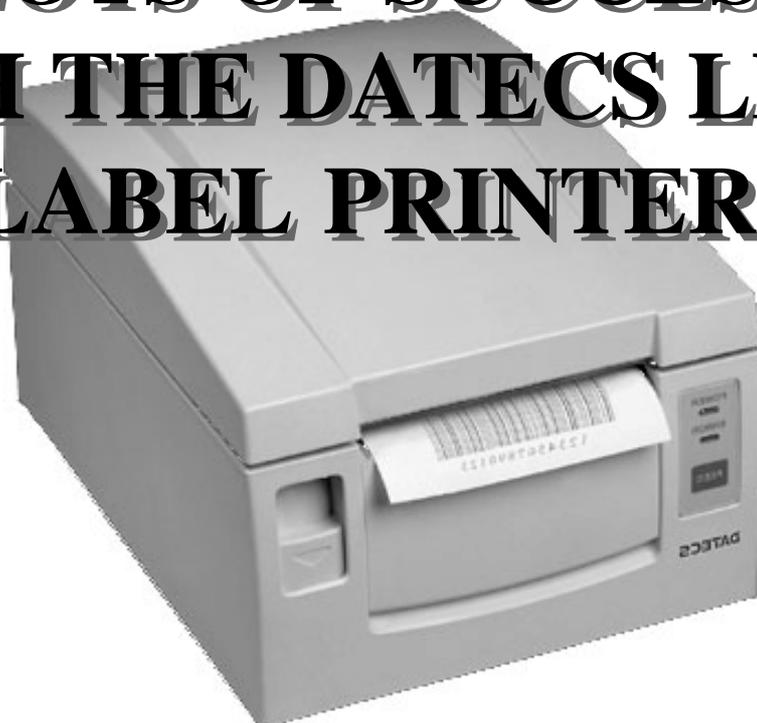


⚠ ATTENTION! Do not clean the *thermal head* immediately after a printing session - the unit is still very hot!

Cleaning the thermal head:

1. Switch the printer OFF. Open the top cover and using a slightly moist piece of cloth (use water) clean the head from dust, blots or other dirt.

**WE WISH YOU
LOTS OF SUCCESS
WITH THE DATECS LP1000
LABEL PRINTER!**



1 DATECS

<http://www.datecs.bg>

Sofia 1113 - BULGARIA

phone: 02/70 30 94 fax: 02/70 04 78

2. GENERAL DESCRIPTION OF THE LP-1000

The LP 1000 is a thermal printer designed to print small sized labels and graphics on thermo-sensitive paper. It is particularly useful when printing information, arranged in a template form, which has to be partially modified under customer demand. The printing speed is 50 and 150 mm/sec.

The memory of the printer contains a command file which stores data on the arrangement and design of the separate graphic elements, easing your work considerably when you have to print a greater number of labels. On the other hand it supports the PCX format and gives you the opportunity to design the graphics of parts of the label with an appropriate program under Windows and store it in the memory of the printer in advance. The inbuilt 5 matrix fonts with different sizes, as well as the freely selectable option for additional scaling and rotation, gives you greater freedom in designing the inscriptions on your labels. Should these fonts fall short of your requirements you are free to load additional fonts in the memory of the device.

In addition the LP 1000 prints bar codes, thus becoming an absolute must for stores and warehouses, where the printing of this type of information is often needed.

In conclusion, the LP 1000 offers fast and flexible printing at a quality which is very similar to that of most contemporary laser printers (printing density - 203 dpi).

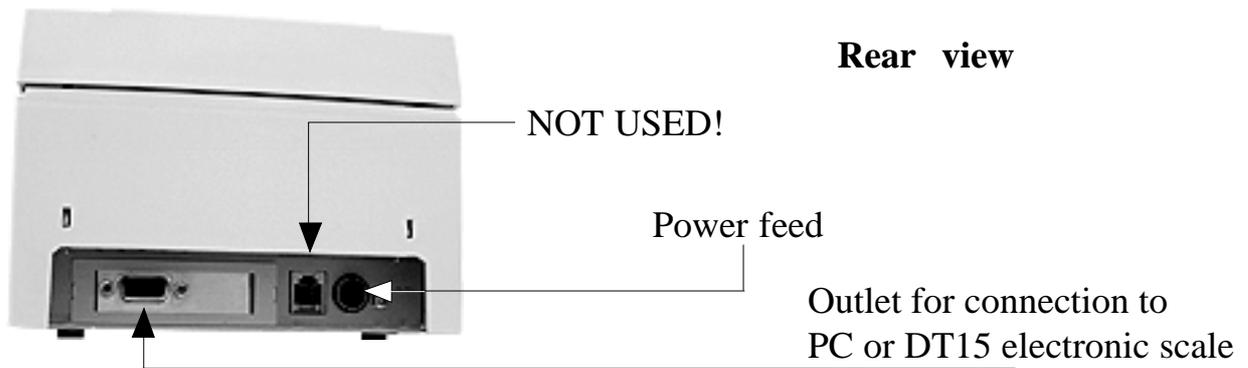
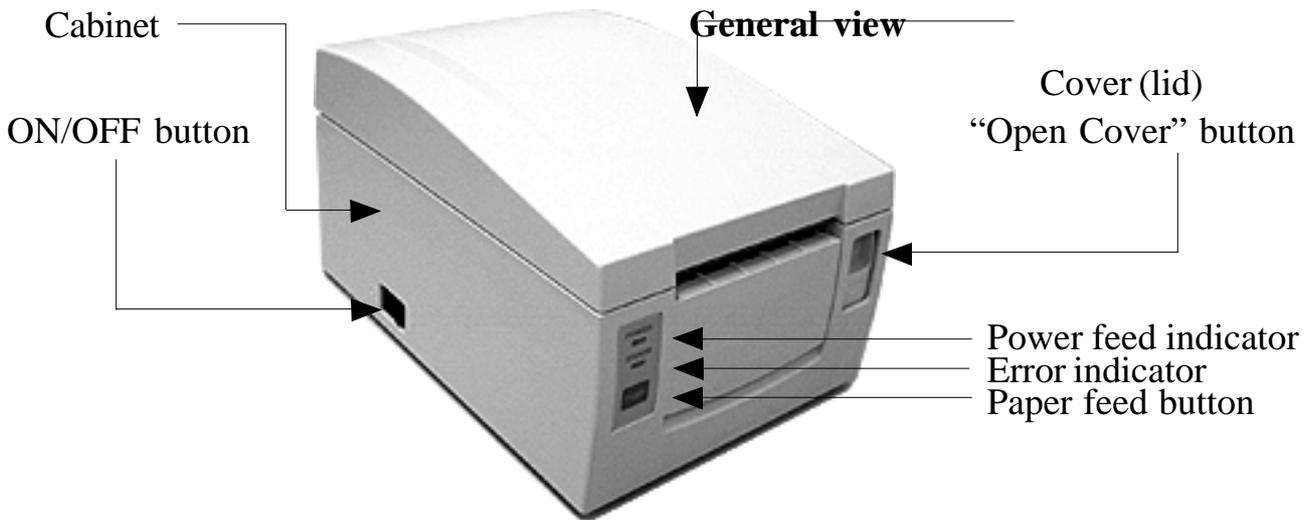
2.1. Unpacking and delivery content



The delivery package should contain:

1. An LP1000 thermal printer unit with PC-connection cable (also DT-15 electronic scales),
2. A 58 mm paper roll splitter,
3. AC power supply adapter,
4. Paper roll with labels,
5. User's Manual (the book you're now reading).

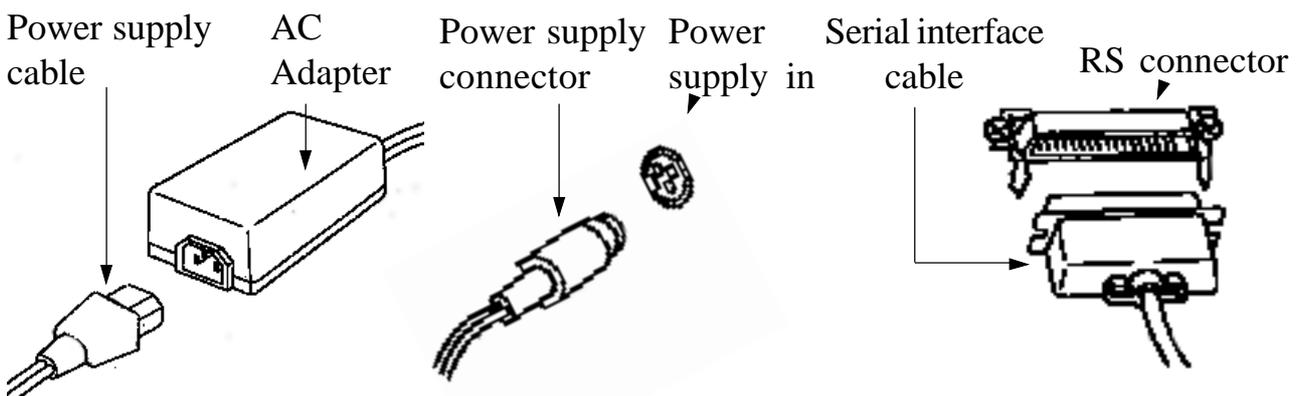
2.2. Cabinet and description of parts



2.3. Cables and connections

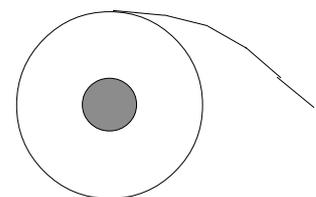
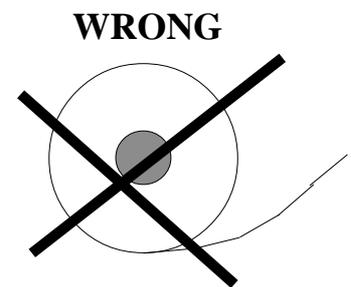
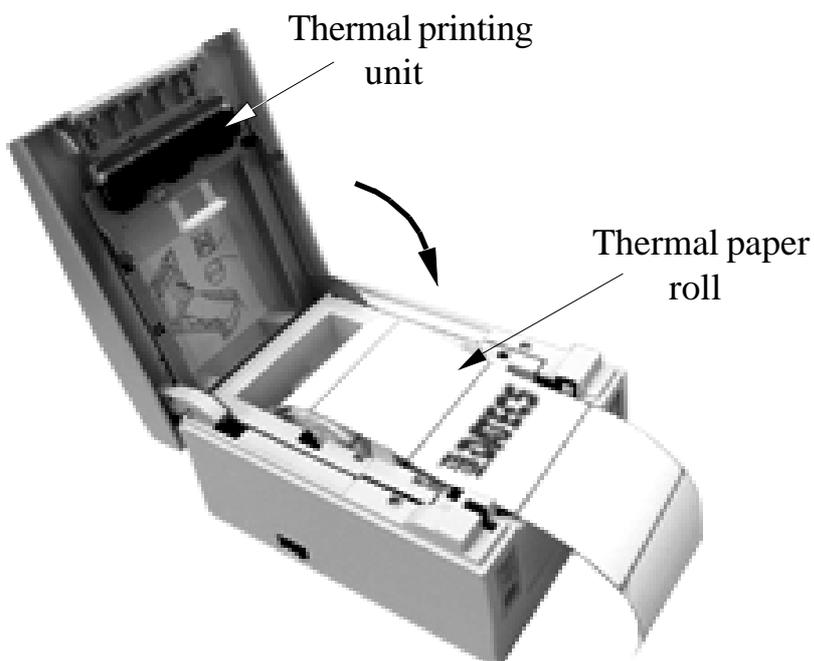
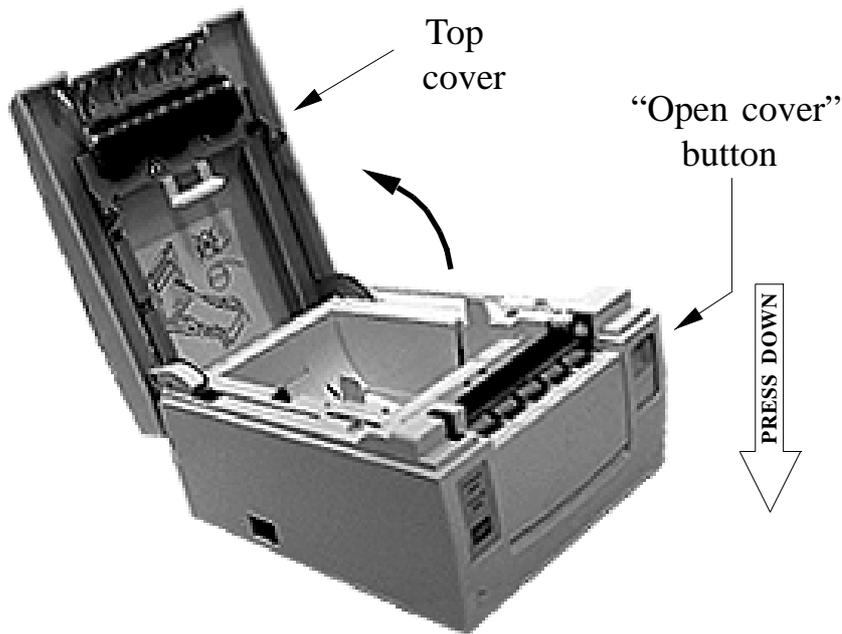
a/ Connecting the power supply cable (when you need to disassemble the printer disconnecting the cables must be done after switching OFF. Don't pull the cable itself but disconnect it by holding connector head - shown below)

b/ Connecting the cable for connection to a PC or the DATECS DT-15 electronic scale (only one at a time).



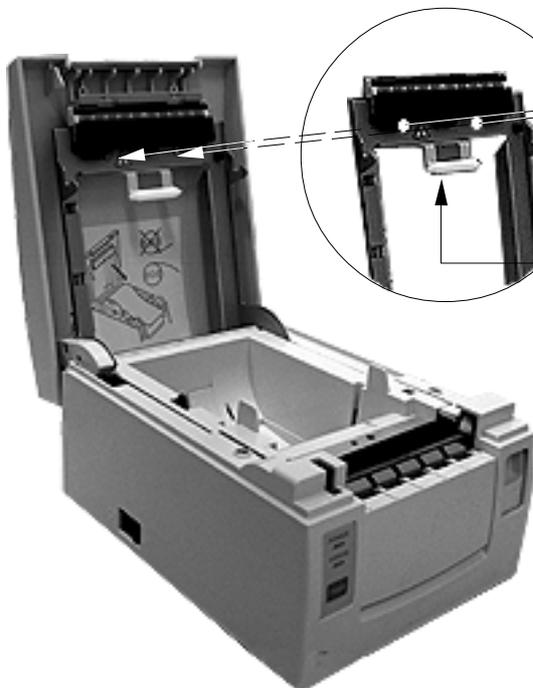
2.4. Placing and replacing paper rolls

1. Switch the printer ON
2. Press the “open cover” button
3. Raise the cover to vertical position (as shown)
4. Check for the correct direction of unrolling the paper and if OK place it in the paper housing
5. Pull out about 5 cm of paper out of the cabinet (see illustration) and carefully close cover. A distinctive clicking sound should be heard.
6. Press FEED button to position the label.



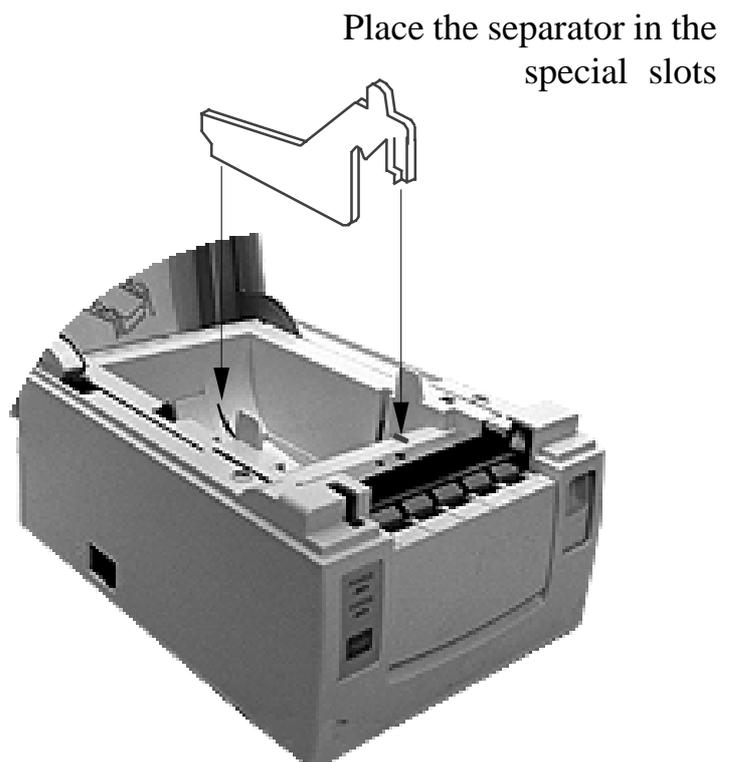
2.5. Placing the 58 mm paper restrictor

1. Switch the printer OFF
2. Open the cover of the printer
3. Unscrew the two screws shown on illustration and take cover off.
4. Take off the screw which holds the paper holder
5. Replace the controller in the direction shown by the arrow
6. Fasten screw back again
7. Place printer cover back and fasten the two screws
8. Place the separator as shown on illustration
9. Set switch 5 to work with the narrow roll



Take off screws and dismantle part

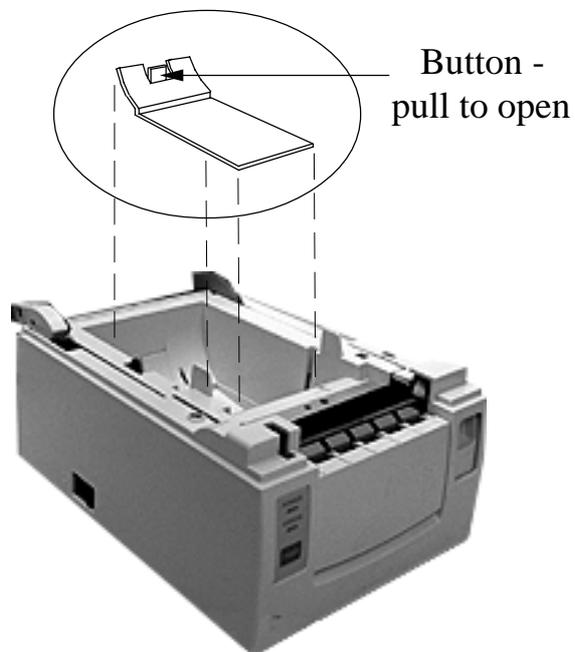
Unscrew holder, turn to opposite position and fasten on again.



Place the separator in the special slots

2.6. Configuration keys setup

Cover of configuration keys



To reach the configuration keys:

1. Switch printer OFF
2. Open the cover of the printer
3. Take out the paper roll
4. Pull the button and raise the cover of the keys
5. Set the configuration key as described further in the Manual
6. Fix cover back and switch printer ON.

2.7. Operating the printer

The functions of the printer are controlled by commands, sent via a serial interface. It is able to maintain 8 baud rates set up by adjusting the configuration keys: 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200 bps, 8 bits without a control bit. The printer uses a software protocol which permits its direct control under DOS but can also support Xon/Xoff protocol.

Each printer command consists of one line of text ending with an LF (0Ah). Commands are made up of one or two letters followed by a different number of parameters divided by a comma. Intervals **MUST NOT BE ENTERED** in these commands – this will be treated as syntax error. Capital and small letters are identified. A detailed description of the commands follows but it must here be underlined that if a command starts with “;” it will not generate any action on the part of the printer. This command may be used for comments if we register the commands in a text file.

The fastest and easiest way to work with this printer is to use the accompanying software program LP 1000.EXE with the help of which you can arrange the elements of the label and see its final appearance on the computer screen even before loading it into the printer. You can also print it out as a test trial. In order to work with the program successfully you will only need to have a general idea about the functions of the printer

– no special knowledge of the commanding language will be needed. A more detailed description of the program you will find further in the present Manual.

It is, off course, possible to prepare the information for printing in advance in a text file and send this over the serial channel. Here is a description of one possible option for preparing a label. It includes the following stages;

- When working under DOS, the setup of the PC serial port is done with the MODE COMn command in parallel to the setup of the printer, the format of this command being:

MODE COMn:baud rate,n,8,1 where “n” is the number of the serial port and “baud rate” is the set up speed of the printer.

- Select a name for the form. In any case it is advisable that the first line of the text file should include the command for deleting a form of the same name (FK) - if such exists, it will be deleted and replaced with the new one. You may then proceed with the loading of a new form (command FS).

- The length of the label is defined as well as the distance between the separate labels. When using paper rolls these distances may be arbitrarily selected and set but when working with stick-labels, the length of the label must be set as close to its actual dimensions as possible or the result may be incomplete printouts or empty labels. The command Q, with all demanded parameters, is placed at the beginning of the text file. Other commands may also be located here - starting point (R), select code table (I), print density (D) and printing speed (S).

- Designing the appearance of the label. Setting the elements which will not be subject to changes - they will need no counters or variables.

- Setting and defining the elements subject to changes for each label. When some of them are whole numbers and will change at regular rates a counter may be defined for them. The rest must be variables. Depending on the case in question the information on a given inscription or bar code may be set in several different variables and/or counters.

- Defining variables and counters includes an assessment of their maximum possible length, alignment if and when the text is shorter than the maximum length, rate of growth of the counters. The selection of the initiating text is important too in that if it is not informative operating with the forms later on may be difficult. A line with the command “V” or “C” is added in the text file for each counter or variable.

If we wish to insert graphics in the label, we must select a name and position for this element and add a command for its layout in the text file (GG). The PCX file must be prepared in advance on a PC and loaded into the printer prior to the execution of the

form. Before sending it to the printer its length must be verified and noted because the loading program GM will demand this information. One possible way for doing this is by sending the file from a terminal program with the DOS command File Name COMn:/B (sending the file as binary in this case is obligatory - “n” is the number of the serial port).

- Selecting the position, font, size and orientation of the inscriptions on the label. “A” commands are added for this purpose and if necessary, the inclusion of text modifiers for the counters and the variables for receiving the necessary strings for printing.

- Selection of the type, position, size and orientation of the bar codes - if there will be such - where modifiers may also have to be used.

- If drawing of lines and frames is needed the following commands may be added - LE, LO, LW, X.

- At the end of the file the command FE is added - “Form End”.

- The ready file is then sent to the printer: the form should be loaded into the memory and be printer out in the list next with the F1 command.

With the FR command the form may become active. Values of the variable and counters are added with the command “?” from the terminal program. In this– no special knowledge of the commanding language will be needed. A more detailed description of the program you will find further in the present Manual.

The forms, the graphics and loadable fonts use a common memory of the printer, i.e., if we enter more graphic information there will be less memory left for forms and vice-versa. This memory restriction comes for two reasons; on the one hand not more than 64 forms, graphic files and fonts can be stored in the memory, irrespective of how small they happen to be. On the other hand is the restriction related to the volume of the memory itself, which is 63 kB. It must be remembered that the memory intended for storing forms and graphics is distributed in parts of 256 bytes each meaning, that even a form of only 10 Bytes will take up 256 bytes of the volume of the memory.

The maximum length of the printed label is defined by the size of the graphic buffer - 1640 dots (205 mm). The maximum width is 608 dots (76 mm) given complete width of the paper roll - 80 mm. A plastic-made separator can be placed to make possible the use of narrower paper roll with printing surface of 432 dots (54 mm) - see illustrations.

When the printer is used for longer printing sessions the printing head unit may heat considerably and printing is interrupted for cooling off. It is for this reason that when

printing labels with larger black areas the printer be switched off at shorter intervals for cooling.

CONFIGURATION KEYS

SW1	SW2	SW3	Baud rate
off	off	off	1200
on	off	off	2400
off	on	off	4800
on	on	off	9600
off	off	on	19200
on	off	on	38400
off	on	on	57600
on	on	on	115200

	OFF	ON
sw4	Hardware protocol	Xon/Xoff protocol
sw5	Narrow papaer roll	Wide paper roll
sw6	Paper roll printing	Sticker labels
sw7	No separator used	Separator included
sw8	Normal operation mode	DATECS LP50 compatible

2.8. Operation keys

The FEED button extracts paper until it is released. In the “sticker type labels” mode positions the printing head over the next label.

ATTENTION! If you keep the button pressed when printer is switched off and switch it on in the meantime it will print out diagnostic information. After this operation the printer **MUST** be switched off and on again.

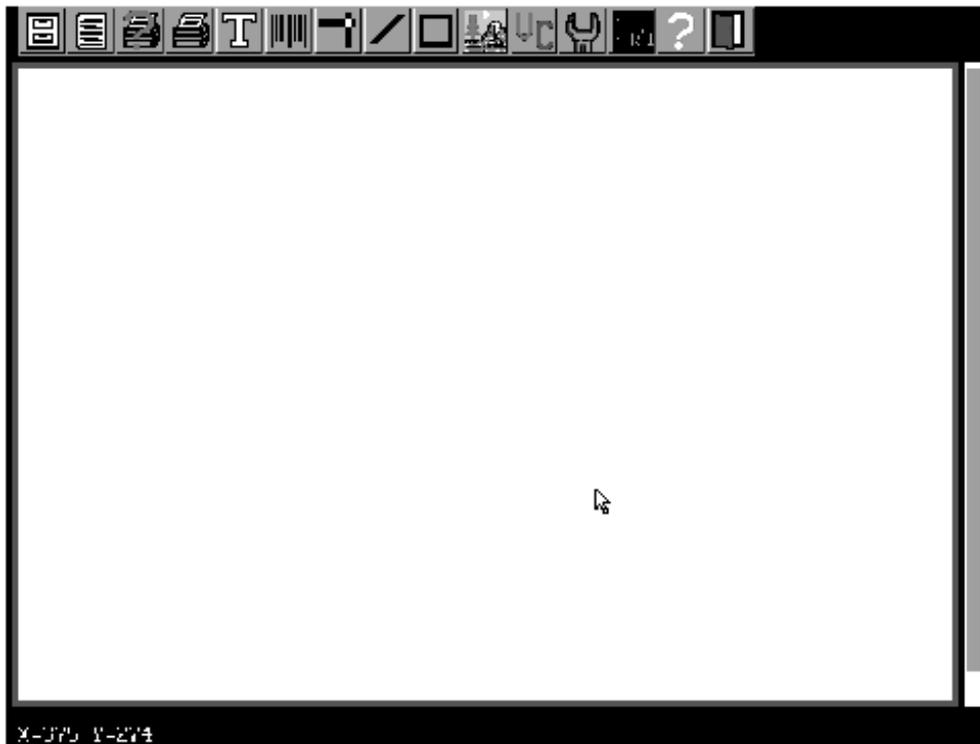
2.8. Indicators

- POWER** Active when printer is ON.
- ERROR** Normally - when printer is OFF - it is not active.
 Permanently active when the cover is opened and paper roll is installed in position.
 When no paper is installed it blinks at intervals of half a second.
 Blinks each half second when printing head unit is overheated.

3. USING THE LP1000 SOFTWARE PACKAGE

The **LP1000** is a graphic and text editor of labels. It gives you the ability to create your own labels and the opportunity to evaluate its appearance before actually seeing it in print. The product is included in the set which comes with the purchase of the printer and using it demands a minimum of computer-related knowledge.

Computer hardware and software requirements are also nothing to worry about - only about 1 MB of disc space is needed and a mouse! Copy the contents of the diskette in any directory and start the LP1000.EXE file. You'll see this window.



This is the main dialog window of the program. The wide field correlates to the label and its dimensions may be changed depending on the selected size of the label you will work with. Follows a detailed description of the buttons.



3.1. Working with files and forms

All actions related to the loading, saving in the memory and downloading from the printer of forms, graphics and fonts are executed from here. Clicking on this button opens a dialog window having the following appearance and content:

Button **<FORMS>** shows a list of forms, loaded in the printer. Select one of them by clicking on it and edit by clicking **<Edit>**, save it on the disk with **<Save>** or delete it from the printer by clicking **<Delete>**.

Button **<GRAPHICS>** shows a list of the graphics, loaded in the printer. Select one of them by clicking on it, save it with **<Save>** or delete by clicking **<Delete>**.



Button <**FONTS**> displays a list of all fonts, loaded in the printer.

Processing: select with <Select>, save to disc with <Save> or delete with <Delete>.

Button <**New Label**> starts the editing of a new label. ATTENTION! Information on the screen will be deleted without warning. Save the label which you have worked on in the memory of the printer or the disc!

Button <**Load Label**> loads a label, saved earlier from the disc. ATTENTION! Information on the screen will be deleted without warning. Save the label which you have worked on in the memory of the printer or the disc!

Button <**Save as Label**> is clicked when you have to give a name to the label on the screen and save it as a file to the disc. This file will contain the adjustments made on the label and the objects on the screen including graphics, fonts, definitions and the current status of the variables and counters.

Button <**Save as Form**> is clicked to give a name to the label on the screen and save it as a file to the disc. This file will contain the adjustments made on the label and the objects on the screen but without the graphics, the loadable fonts and the current status of the variables and counters. To print a label with this information the graphics and the fonts must be loaded into the printer in advance.

Button <**Store current label**> stores the label from the screen under the selected name.

Button <**Store form to printer**> opens a dialog for the selection of a file from the disc. The form selected by the user will be loaded in the printer and if this form contains graphics and loadable fonts you must load them yourself by using the buttons, shown below.

Button <**Store graphics to printer**>. Opens a dialog for the selection of a file from the disc. Acceptable are only PCX format, monochrome files of no more than 32 kB.

Button <**Store font to printer**> Opens a dialog for the selection of a file from the disc. The fonts must be in a specified format. The command for loading a font must be compatible to the EPL2 language. For the generation of a font you may use the “Eltron Font Downloader” and the needed TrueType font with the given number.



3.2. Label setup

This part of the program gives you the option to set the different parameters of the label and the print. The fields on the screen have the following meaning:

Label width: The width of the label in dots. If you know the size in millimeters, multiply this times 8 and note down the result. Possible values are between 80 and 608.

Length: The length of the label in dots. If you know the size in millimeters, multiply this times 8 and note down the result. Possible values are between 200 and 1640.

Orientation: Sets the printing orientation of the label. Select between “Top” - normal orientation and “Bottom” - rotated to 180°.

Darkness: Sets printing density, where the possible values are between 0 and 15, 15 being the darkest possible option. Greater printing density setups may cause a slow down in the printing speed, especially when surrounding temperatures are lower.

Speed: Sets the printing speed. Set in inches per second possible values are between 2 (about 50 mm/sec) to around 6 (about 150 mm/sec). It must be born in mind that the quality of the printed image may deteriorate at speeds above 125 mm/sec depending on the thickness of the labels and the quality of the paper. Additional adjustments to the printing density in such cases may have to be done.

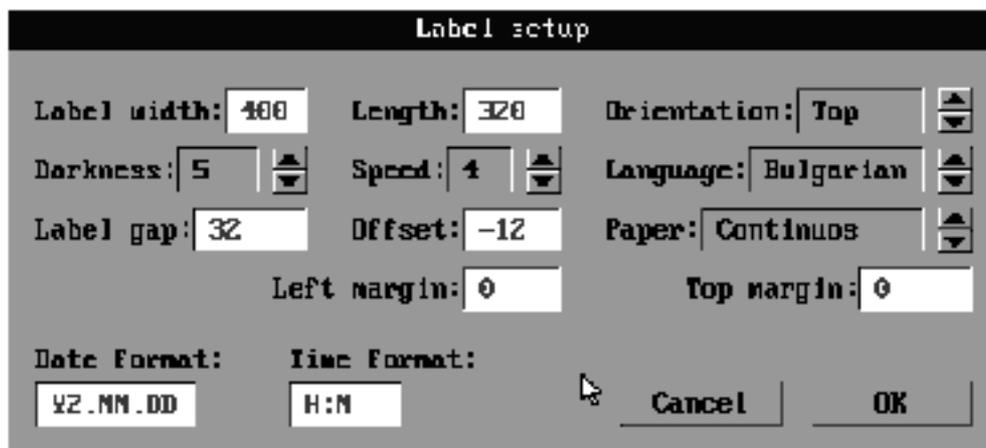
Language: Sets the language of the printed label. Possible selections are between “English”, “Bulgarian” and “Russian”.

Label gap: Sets the distance between the pages when labels on paper rolls are used or the distance between the separate labels/ the thickness of the black line when working with labels. Maximum 80 points.

Offset: Additional shifting of the start of the printout. Its value depends on the type of the labels used. Possible values are between - 80 and 80 dots.

Paper: Paper type (of no importance at present)

Left margin: Horizontal shift of the image in dots. Possible values are between - 607 and 607.



Top margin: Vertical shifting of the image on the label in dots. Possible values are between -1639 and 1639.

Date format: The date print format must be of the type AAxBByCC, where AA, BB and CC may be:

- DD:** Day of the month
- ME or MN:** The month, shown in digits or letters
- Y2 or Y4:** The year, shown in 2 or 4 digits

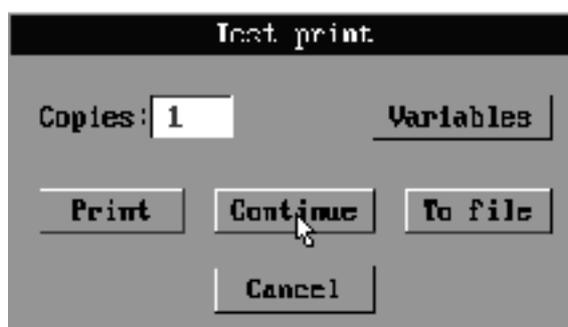
Time format: The hour/minutes print format must be of the type AxByC, where A, B and C may be:

- H:** Hour
- M:** Minutes
- S:** Seconds

A field of one type may be used only once or may not be employed at all. Select from the symbols “x” and “y” - the printer will use them as spaces.



3.3. Test print



The option includes printing the created label on the screen without having to load it into the memory of the printer. If the label contains graphics or loadable fonts the available options are two:

- To send the data on the graphics and the fonts during the actual printing. The method will work even when the graphics and the fonts have not been loaded into the printer although some more complicated images will take some time to get saved into the printer's memory.

- The program accepts that the graphics and the fonts have already been saved into the printer's memory. Sending the data on them will be fast but if the graphics and the fonts cannot be found in the memory of the printer they will not be printed.

The selection of one of the above modes is done from the dialog “**Settings and diagnostic**” (the gauge).

Text field <Copies>: Defines the number of similar labels for print.

Button <Variables>: If the label contains variables or counters their current values can be seen and edited from here.

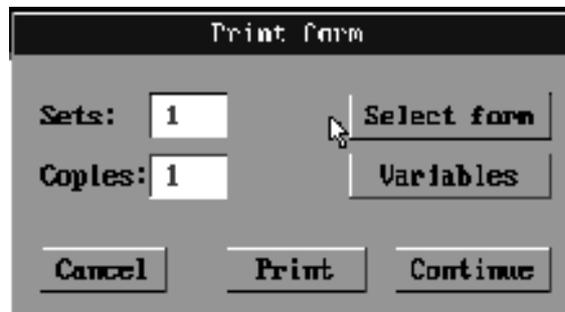
Button <Print>: Send the command to print out the set number of labels.

Button <Continue>: Sends a command to the printer to resume printing (after an interruption)

Button <To file>: Instead of being sent to the printer the data and the commands for printing are saved in a file under an entered name.



3.4. Printing forms from the printer



Print a form, which has been stored in the printer in advance.

Button <Select form>: Opens a list of all forms, stored in the printer from which a selection for printing may be done. The name of the selected form appears in the header of the dialog.

Text field <Copies>: Sets the number of the absolutely similar labels which will be printed.

Text field <Sets>: Sets the number of the existing packs of similar labels. Could be different from 1 only if there are defined counters in which case after printing the Copies label the image is recalculated with new values of the counters and this is repeated Set-times.

Button **<Variables>**: If the label incorporates variables and counters it is from here that you can view the current values or set new ones.

Button **<Print>**: Sends to the printers a command for printing a given number of labels.

Button **<Continue>**: Sends a command to the printer to complete a previously started printing job.



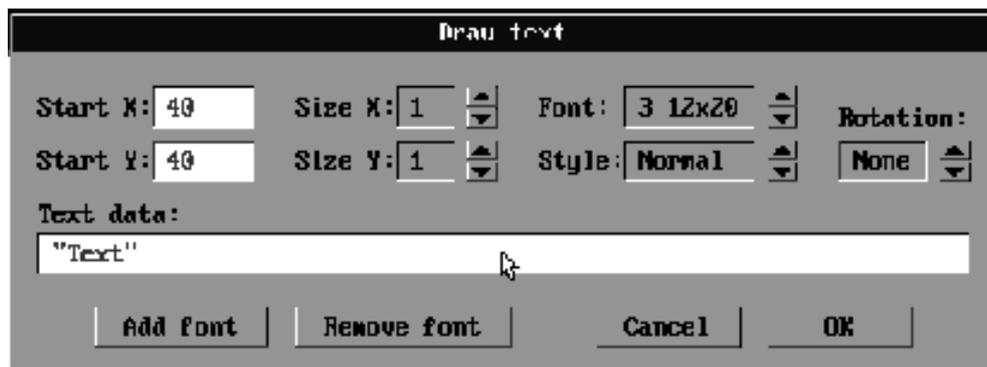
3.5. Drawing texts

Inserts a line of text in the image on the label.

Field **<Start X>**: X- coordinate of the left upper corner of the text in dots

Field **<Start Y>**: Y-coordinate of the upper left corner of the text in dots

Field **<Size X>**: Multiplying the font times the horizontal size - from 1 to 8



Field **<Size Y>**: Multiplying the font times the vertical size - from 1 to 9

List **<Fonts>**: Defines the font currently in use. The printer has 5 in-built fonts with sizes 8 x 12, 10 x 16, 12 x 20, 14 x 24 and 32 x 48., which have names from 1 to 5 respectively. If additional fonts have been loaded they will appear in the name with a capital Latin letter and height (the width of each of the loadable fonts may differ).

List **<Style>**: Defines the set printing style, the options being:

- | | |
|----------|--------------------------------------|
| Normal: | Unchanged |
| Bold: | Bold characters |
| Inverse: | Inverted (white on black background) |
| BoldInv: | Bold inverted |

Loadable fonts always appear as Normal.

List **<Rotation>**: Defines the orientation of the text- 0°, 90°, 180° or 270°.

Button **<Add font>**: Load a new font in the printer - it will appear in the **<Fonts>** list and can be selected for use.

Button **<Remove font>**: Presents a list of the loadable fonts used in the current label with the option to select and delete any one of them.

Field **<Text data>** : Contains the printing data. The data is formed by joining a free text, the current data or hour and some of the defined and initialized counters and variables ordered and in quantity set by the users. The different elements are joined in the order of their description from the left to the right. Their encoding is as follows:

- Free text: Entered directly and closed by inverted commas. If the text must contain the symbol inverted comma, it must be preceded by ‘\`.
- Current date: This is coded with TD[n]. The non-obligatory element sets a shift back or forward in days in relation to the real-time clock of the printer. Possible values are between 1...3500 days .
- Current hour: Coded with TT.
- Variable: Format Vn [Modifiers].
- n: Order number of the variable.
- Modifiers: These are instructions for separating some symbols from the variable. Their number is arbitrary. If they are not available, the variable is joined as per definition and initialization without any additional processing.

The printer executes the following modifiers:

- \>’: Cuts the leading symbols from the string, identical to the symbol, following the symbol of the modifier. May also be used for deleting leading zeros or spaces.
- \<’: Cuts the end symbols from the string, identical to the symbol, following the symbol of the modifier.
- Rn: Deletes the symbols to the left of n-.
- Ln: Saves the last n symbols in the string.
- Mm.n: Separates “n” symbols from the string, starting from the position m.
- #: If the string can be interpreted as a whole number, deletes the leading zeros.
- Counter: Format Cn[Modifiers]
- n: Logical number of the counter.
- Modifiers: Their functions and content is similar to that of the variables.

The printer processes the variables and counters in the following order:

1. The current value of the counter or the variable is accessed.
2. Its formatting is performed depending on the way it has been defined.
3. All modifiers are performed from left to right.
4. The resulting string is attached to the end of the string acquired after the processing of the previous elements.

Examples:

“Date: “TD” Time:”TT : This will generate: Date: 02 OCT.2000 16.30

V0><C1L3 : Will generate a string from the variable V0, which has

V0L1V0M3.2V0R1

been cleared off leading and end intervals, and the left 3 symbols of the counter C1.

Will generate a string which includes the first, third and fourth as well as the last symbols of the variable V0.

ATTENTION! THERE ARE SOME DETAILS, WHICH CAN EASE YOUR WORK CONSIDERABLY!

1. The above refers to the following buttons:

- drawing texts;
- drawing bar-codes;
- drawing rectangles;
- drawing diagonal lines;
- drawing frames;
- inserting graphics.

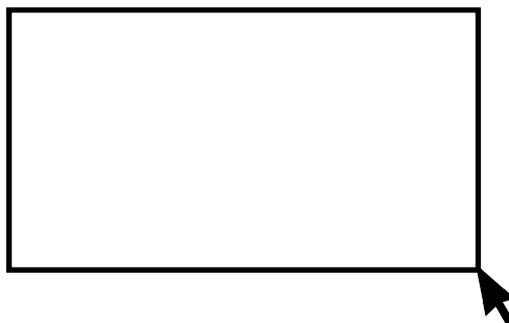
If you click any of these with the left key of the mouse without letting go by moving the cursor in the white field of the screen and selecting a certain point there when depressing the point will be saved as the start of the coordinate system for placing the image you have selected.

2. Refers to the following buttons:

- drawing bar-codes;
- drawing rectangles;
- drawing diagonal lines;
- drawing frames.

NOTE! These simplified actions are possible only after completing the selection of a given object, which is done by pressing the left key of the mouse somewhere on the object (for frames - click on any of the borders of the frame). You will notice the appearance of thin dotted line.

When the key of the mouse is clicked close to any one of the angles of the objects mentioned (as shown in the figure below) and without releasing the key move it to move the captured object in the vertical and horizontal direction. Editing a bar-code is possible only in the vertical direction (by capturing only the basis of the bar-code image).



3. When an object has been placed in the white field and you wish to perform some editing on it will only be necessary to move the mouse somewhere within the object and to press its right key. The “edit” window will appear on the screen.

4. If you wish to delete an object it is enough to position the mouse on it and click to select - then press the DEL key on the PC keyboard.

5. Refers to the drawing of texts and bar-codes - if there is a syntax error in the Text data field (respectively Bar-code data field) the image which will appear will be:

- text - instead of text you will see @@@@ - the printer will not print anything;
- bar-code - a blot will appear on the image of the bars and the digits between the bars will be replaced by zeros. In this case too - the printer will generate no prints.

6. There are some key combinations which you might have to use:

Ctrl + C copies a selected object. This may become a necessity when there are several similar objects within one and the same object. After copying, the insertion of these objects is done by pressing the key **Ctrl + V**.

Shift may be used when there are several objects in the white field placed one over the other. You can select each one of these overlaid objects by clicking the left key of the mouse (after it has been positioned on the selected object). When the dotted line closes around the selected object you can release the **Shift** key of the keyboard and press the right key of the mouse to edit the object.

Ctrl Keeping this key pressed and by consecutively pressing the left mouse key over an object the object/objects are selected. This is necessary when you need to replace a group of objects from one location to another.

Ctrl + A selects absolutely all objects you have drawn.

Ctrl + U unmarks selected objects

Ctrl + B and **Ctrl + T** are used for overlaid objects. When you have two objects one over the other and you wish to inverse the colour of one of them in contrast to the other (for example, a black rectangle over which you wish to place a text the colour of which must be inverse to the background) you must select the rectangle and press **Ctrl + B** to place it under the text (or select the text and press **Ctrl + T** to place that over the rectangle).



3.6. Drawing bar-codes



3.10. Inserting graphics

The function inserts a bar-code image into the label.

Field <**Start X**>: The X coordinate of the upper left angle of the bar-code in dots.

Field <**Start Y**>: The Y coordinate of the upper left angle of the bar-code in dots.

Field <**Height**>: Height of the bar-code in dots.

List <**Narrow bar**>: The width of the narrow bars in dots. Possible values depend on the type of the bar-code.

List <**Wide bar**>: The width of the wide bars in dots. Possible values depend on the type of the bar-code. Some types of bar-codes do not employ this option.

List <**HR text**>: Checks whether the content of the bar-code is not duplicated in a text form and the alignment settings.

Options:

None: No duplicated text

Left: The duplicated text is left aligned

Center: The duplicated text is justified

Right: The duplicated text is right aligned.

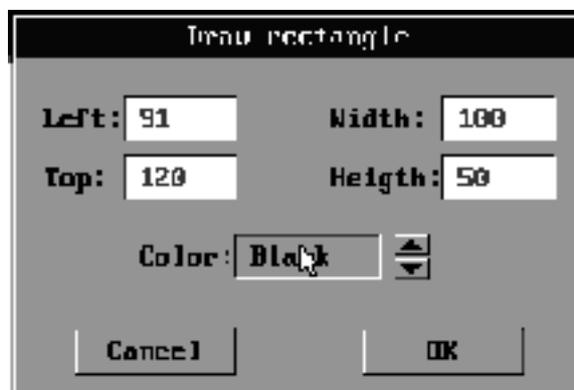
List <**Rotation**>: Sets the orientation of the bar-code to -0° , 90° , 180° , 270°

List <**Barcode**>: By clicking in this field you can select the type of the bar-code you wish to draw. Details about the arrangement and the possible symbols employed you will find further on in the documentation.

List <**Text data**>: Contains the data for printing. This data is formed by joining the free text, the current date or hour and some of the defined counters and variables in the arrangement and order as set by the user. The separate elements are joined in the order of their description from left to right. Their encoding is absolutely similar to the one described in the part, relating to the writing of a text.



3.7. Drawing a rectangle



Inserts a rectangle with the set dimensions in dots and the set colour parameters

Field **<Left>**: The X coordinate of the left upper angle of the rectangle. Possible values are between - 607 to 607.

Field **<Top>**: The Y coordinate of the left upper angle of the rectangle. Possible values are between - 1639 to 1639.

Field **<Width>**: The width of the rectangle - between 1 and 608.

Field **<Height>**: The height of the rectangle - between 1 and 1640.

List **<Color>**: Sets the drawing colour:

Black: draws in black

White: draws in white. If the rectangle is located over part of a figure, drawn there previously, the part in question will be deleted.

Inverse: Changes the color of the dots on which it falls to the opposite colour.



3.8. Drawing a diagonal line

Inserts a diagonal line of set thickness and colour.

Fields **<Start X>** and **<End X>**: Start and end coordinate for X of the line in dots. Possible values from -607 to 607.

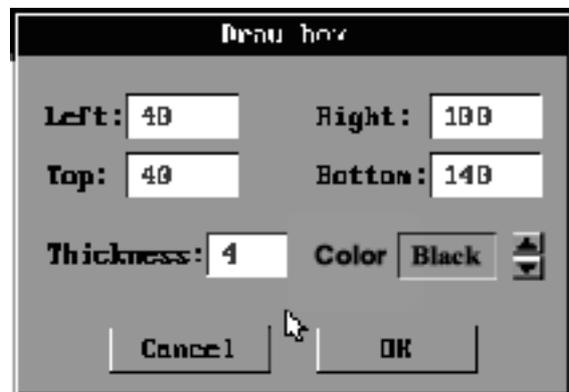
Fields **<Start Y>** and **<End Y>**: Start and end coordinate for Y of the line in dots. Possible values from -1639 to 1639.

Field **<Thickness>**: Sets the thickness of the line in dots. The thickness is recorded in the X direction if the diagonal angle is over 45° and in the Y direction in the opposite case. Possible values are between 1 and 80.

List **<Colour>**: Sets the drawing colour:

Black: Draws in black.

White: Draws in white. If the line crosses over a part of a figure, drawn there previously, it will leave a pale trace.



3.9. Drawing a frame

Inserts an empty frame which surrounds a respective rectangular location on the overall print area of the label.



Fields **<Left>** and **<Right>**: They set the coordinates of the left and the right side of the frame in dots. Possible values are between - 607 to 607.

Fields **<Top>** and **<Bottom>**: They set the coordinates of the upper and the lower side of the frame in dots. Possible values are between - 1639 to 1639.

Field **<Thickness>**: Sets the thickness of the frame in dots. The thickness is at the expense of the interior area of the frame and possible values are between 1 and 80.



3.10. Inserting graphics



Offers the option to include a graphical image into the label. The image must be processed into the monochrome PCX format

Fields **<Start>** and **<Start Y>**: Set the coordinates of the upper left angle of the image. These coordinates may be entered directly although positioning the image with the mouse is much easier.

Field **<Store as>**: Enters a name under which the graphic image will be stored in the memory.

Field **<Load>**: Opens a dialog window for selecting a PCX file. When inserting a new image this operation is obligatory.



3.11. Defining variables and counters

Defines and sets the form of the counters and variables used in the label. You can define not more than 32 variables and up to 8 counters.



The creation of a new variable and counter is done by selecting from the list above (to the left of the dialog window) the option Counter or Variable and by clicking on the button <New>. The program will offer the first free variable or counter. Enter the desired characteristics of the new variable or counter and confirm with the button <Update>. Follows a description of the controls in the dialog window:

Prompt: A descriptive text for the variable or counter has to be entered (only for your convenience) and this will be seen in the dialog window for setting the parameters of the variable or the terminal.

Length: Maximum number of symbols in the counter/variable. This is, at the same time, the length of the alignment if set.

Justify: Sets the type of the alignment related to the variable or counter. If aligned you may select the symbol for the forced alignment. Possible alignment options:

None: Not aligned. The true length is used of the variable/counter.

Left: Left alignment to the <Length> symbol.

Right: Right alignment to the <Length> symbol.

Center: Centered alignment in the <Length> symbol.

Fill: The fill-in (force justify) symbol when aligned.

Increment: Sets the growth increment of a counter. Possible values between -9 to 9. The field is of no importance for variables.

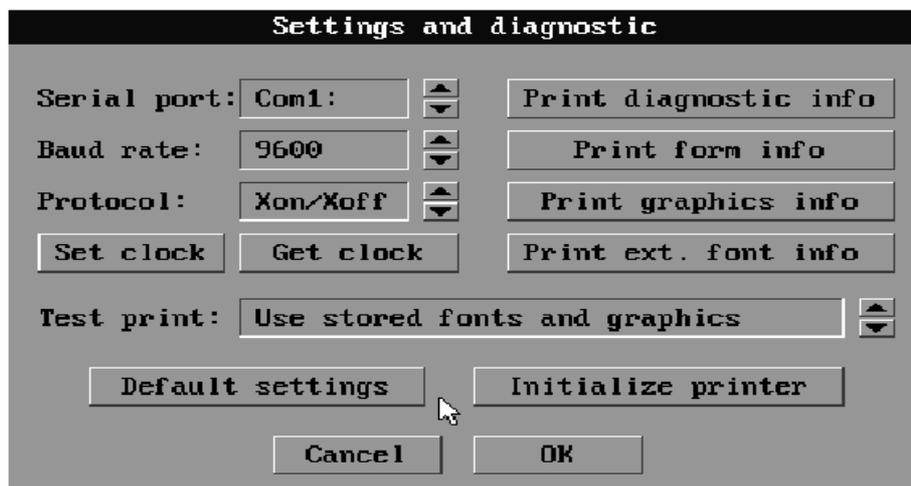
Button <Delete>: Deletes the variable or the counter, the description of which is currently visible in the dialog window.

Button <Clear all>: Deletes all variables and counters. Restoring them is possible manually only and one by one.

Button <New>: Defines a new variable or counter. An additional description of its characteristics must be entered in the text fields and the above lists in the dialog and they must be confirmed by clicking <Update>.

Button <From printer>: Reads the currently active counters and variables in the printer, their values and loads them in the program.

Button <Update>: Confirms the newly entered information on the variable or counter.



List **<Serial port>**: Selects the serial port to which the printer is connected. COM1 through COM4 are supported.

List **<Baud rate>**: Sets the speed of transfer of the serial port. Possible values are 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200 bps. The selected value must relate to the one, set by the configuration keys.

List **<Protocol>**: Selects between a hardware protocol and **Xon/Xoff**. The selection must relate to the one, set by the configuration keys.

List **<Test print>**: Sets the printing of the loaded graphics and fonts during test printing (‘Use stored fonts and graphics’) or they are sent directly at each separate print command (‘Send fonts and graphics directly’).

Button **<Set clock>**: Sets the clock of the printer to tally with the clock of the PC.

Button **<Get clock>**: Reads the printer clock and shows it on the lowest line of the screen.

Button **<Initialize printer>**: Deletes all forms loaded into the printer as well as graphics and fonts. Sets all adjustments of the printer in a predefined state. Deactivates the current form.

Button **<Print diagnostic info>**: Prints out diagnostic information, which includes test graphics and the current adjustments of the printer.

Button **<Graphics info>**: Prints out a list of the graphics loaded in the printer.

Button **<Print ext.font info>**: Prints out a list of the fonts, loaded in the printer.



3.13. Terminal

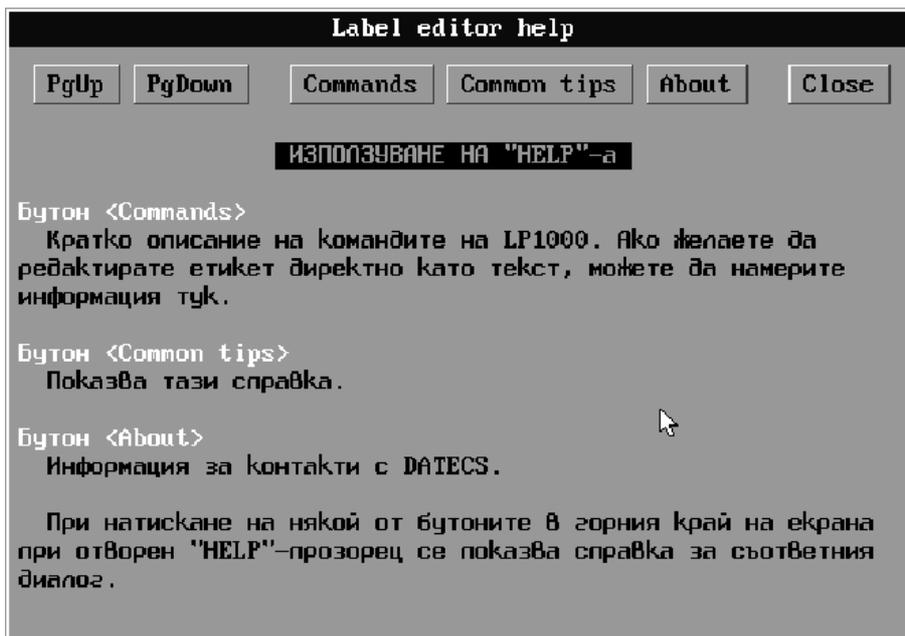
Offers the option to directly communicate with the printer via terminal. The adjustments of the serial port are set from the dialog “Settings and diagnostic”.

Active keys:

F2: Defines whether the symbols sent to the printer will appear on the screen or not.

F3: Defines the mode of displaying of the received information: ASCII (direct display), HEX (hexadecimal) or Mixed (in the hexadecimal mode only if the ASCII code is less than 32)

F5: Clear the screen. F10: Exit terminal. Attention! The first line of the screen does not show the current mode of the terminal but the mode, which will be selected after the next pressing of the key.



3.14. Help

Opens the help window although it can also be opened with the F1 key on the keyboard. In this current state, pressing any of the buttons in the upper end of the screen will show information for the respective dialog.

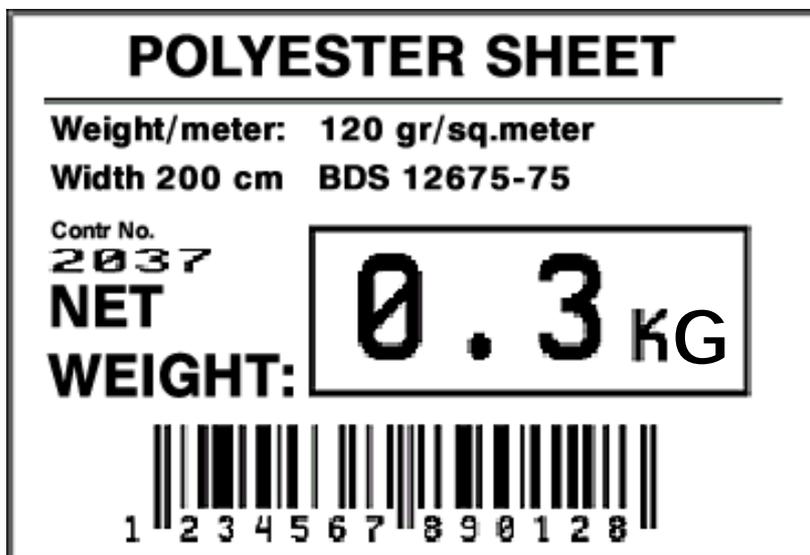


3.15. Exit

Exit the program. If the changes in the last label have not been saved they will be lost.

3.16. DESIGNING A LABEL - EXAMPLE

1. Start the LP1000.EXE file.
2. Select the button "Working with files and forms".
3. Select "New label" from the opened window.



4. Click the button "Label setup".

5. Enter the label parameters, which in this example are:

- Label width: 608- width of label
- Length: 432 - length of label
- Darkness: 5-density of print
- Speed: 4 - speed of print
- Orientation: Top - orientation of the label
- Language: Bulgarian - language of the text
- Label gap: 32 - distance between labels in dots
- Offset: -12 - additional offsetting of the start of the label
- Paper: Continuous - type of paper used
- Left margin: 0 - horizontal offset of the image
- Top margin: 0 - vertical offset of the image
- Date format: Y2.MN.DD - date format of type 01.09.27
- Time format: H:M - hour format of type 14:30

6. Confirm entered parameters by pressing OK button.

7. Select button "Draw text".

8. Enter text parameters for the words "ПОЛИЕСТЕРНА БАТА":

- Font: 5 32 x 48 - size
- Style: Normal - normal text (not inverted/not bold)
- Rotation: None - no rotations
- Size X: 1 - width
- Size Y: 1 - length
- Text data: "Í Î ËËÑÒÄÍ À ÄÀÒÀ" - the text which will be printed.

NOTE: the initial coordinates X and Y may not be entered - the image can be placed on the desired location in the label with the help of the mouse after its appearance. Cyrillic texts can be printed after the installation of a DOS driver.

9. The entered parameters are confirmed with OK.

10. The texts "Í ëî ùòí à ì àñà:120ãð/êâ.ì ", "Øèðèí à 200 òì - ÄÄÑ 12679-75" "Êî í òðî êâí í î ì ãð", "Ì àñà í àòî " and "0.3 êã" are executed by completing operations from 7 to 9 where only the size of the font is changed.

11. Select the button "Draw diagonal line".

The start and end coordinates for X and Y are entered in the appearing window. In order to get a straight line the first and end digit for Y must be the same. An additional line can be placed in and extended later on.

12. The entered parameters are confirmed with OK.

13. Select the "Draw bar-code" button.

14. Enter the parameters for drawing the bar-code.

In the case of this example these parameters are:

- Height: 80 -height of the bar-code in dots
- Narrow bar: 4 - width of the narrow bars (dots)
- Wide bar: 4 - width of the wide bars (dots)

- HR text: Left - for EAN and UPC alignment is not important, because it is present in the bar-code itself. It is here employed in order to duplicate the bar-code as a text.
- Rotation: None - no rotation of the bar-code.
- Bar-code: EAN13 - type
- Bar-code data: "123456789012" - bar-code data. The digit 8 is the control sum which the printer calculates automatically.
Positioning may be done later on.

15. Confirm entered parameters with OK

16. Select the button "Draw frame"

17. The frame parameters are entered, in our example being:

- Coordinates for upper left angle: X=224, Y=159
- Coordinates for lower right angle: X=556, Y=286
- Thickness: 4 - line thickness.

18. Entered parameters are conformed with the OK button.

In this way the label is completed. It now has to be saved as a file on the disc and then loaded in the printer. The following steps have to be performed in order to complete this operation.

1. Use the button "Working with files and forms"
2. Select "Save as label" from the window.
3. The program offers the last edited label as the name of the file and the place - the directory where it is located. You can change the name by entering a new one and additionally add the extension DLB (for example; C\LP1000\VATA.DLB).
4. This entry is confirmed with the OK button.
5. A test print of the newly created label can be done by clicking the button "Test print". If the appearance of the label is satisfactory you may load it into the printer.
6. Select the "Working with files and forms" button and from the opened window select the "Store current label" button. The program asks for the selection of a name for the label which will be saved in the printer (only letters and digits - no more than 8 symbols)
7. Confirm entry with OK.

Note: If there is a file, stored in the printer with the same name, the program will ask for confirming that name or entering a new one.

If you wish to print out 100 new labels select the button "Print form from printer". Click the button "Select form" in order to indicate that you will be working with the label named VATA. DLB and confirm with OK. Enter the desired number 100 in the window - the "Copies" option - and press the button PRINT.

4. List of the commands by categories

Setting the functional mode of the printer

Setting the printing density		D
Selecting the Code table		I
Setting the page length		Q
Setting the page width		q
Setting the starting point		R
Setting the printing speed		S
Setting date/hour*	*	TS
Setting date format		TD
Setting hour format		TT
Setting print direction		Z

Working with counters and variables

Setting values for counters/variables*		?
Defining counters		C
Defining a text variable		V

Generating a graphic image

Generating a line of text		A
Drawing a bar-code		B
Drawing rectangles in XOR mode		LE
Drawing rectangles in black		LO
Drawing rectangles in white		LW
Drawing diagonal lines		LS
Drawing a frame		X
Drawing out a loaded PCX file		GG

Working with forms (command files)

Start of a new form	*	FS
End of a new form	*	FE
Loading a form	*	FR
Deleting a form	*	FK
Recovering the name of the active form	*	FA
Listing of the loaded forms	*	FI

Working with graphic files (monochrome PCX format)

Saving a new PCX file	*	GM
Deleting a PCX file	*	GK
Direct printing of graphic info	*	GW
Listing of loaded PCX files	*	GI

Working with loadable fonts

Saving a new font	*	ES
Deleting a font	*	EK
Listing of the loaded fonts	*	EI

Clearing the memory

Clearing the operational memory	*	M
Clearing current forms and graphic buffer	*	N
Entering default settings		RESET

Print

Printing a label	*	P
Resuming an interrupted printing session	*	PC

Information and diagnostics

Printing diagnostic information	*	U
Retrieving diagnostic information	*	U@
Info on occupied memory	*	UM
Returning a list of loaded forms	*	UF
Returning a list of loaded graphics	*	UG
Returning a list of loaded fonts	*	UE

5. List of the command in alphabetical order

Description		command
Setting values for counters/variables	*	?
Generating a line of text		A
Drawing a bar-code		B
Defining counters		C
Listing of the loaded fonts	*	EI
Deleting a font	*	EK
Saving a new font	*	ES
Recovering the name of the active form	*	FA
End of a new form	*	FE
Listing of the loaded forms	*	FI
Deleting a form	*	FK
Loading a form	*	FR
Start of a new form	*	FS
Drawing out a loaded PCX file		GG
Listing of loaded PCX files	*	GI
Deleting a PCX file	*	GK

Description		command
Saving a new PCX file	*	GM
Direct printing of graphic info	*	GW
Selecting the Code table		I
Drawing a rectangle or a line		L
Clearing the operational memory	*	M
Clearing current forms and graphic buffer	*	N
Printing a label	*	P
Resuming an interrupted printing session	*	PC
Setting the page length		Q
Setting the starting point		R
Setting date/hour*	*	TS
Setting date format		TD
Setting hour format		TT
Printing diagnostic information	*	U
Retrieving diagnostic information	*	U@
Returning a list of loaded fonts	*	UE
Returning a list of loaded forms	*	UF
Returning a list of loaded graphics	*	UG
Info on occupied memory	*	UM
Defining a text variable		V
Drawing frames		X
Setting doirection of print		Z

Note! The commands marked with “*” cannot be included into a form (command file)

6. Detailed description of the commands

A. Setting the printer’s functional mode.

Setting the printing density Offers the option to adjust the printing density depending on the sensitivity of the paper and the character of the printed information.

Format: **Dn** **n** may be within the interval 0 to 15 where 15 relates to the maximum density possible. Setting higher density rates leads to slower printing.

Example: **D6** Sets the printing density to 6.

Setting the printing speed Format: **Sn** where **n** may be between 2 and 6 , the value being approximately 24.5 mm per second. At higher density rates the printer may nor be able to print at this speed.

Example: **S4** where speed is set at 100 mm/sec

Selecting the code table	The Printer supports 3 tables, presented in Appendix A. The symbols with ASCII codes 0...31 there are no images.
Format: In	n=0 IBM n=1 Bulgaria n=2 Russia or Latvia
Example: I1	Selects the Bulgarian set of symbols.
Setting the length of the page	Format: Qm,n[+p] m is the length of the printed area. Possible value is up to 1640 (205 mm). n is the added space after the printout. Possible value - not more than 255(32 mm) p is an additional offset of the start of the label in relation to the end of the black strip. It is a whole digit from -40 to +40. When paper rolls are used sets the vertical size of the printing area and the automatic space added after it. Both sizes are in dots 8dots/mm or 203 dots/inch. If there are elements outside of this size when the image is generated they will be cut off.
Example: Q240,80	Sets the length of the page - 30 mm - and dividing space 10mm When sticker-labels are used sets the height of the label, the size of the black strip on the back side of the labels and the offsetting distance related to the end of the black strip. It is advisable to measure the space between the separate labels and enter the result carefully so as to adjust the printing as accurately as possible. The starting point of the printing of the label is adjusted automatically in relation to the paper sensor - one image per label is printable only.
Example: Q240,40-8	Sets the length of the label to 30 mm, the black strip to 5 mm and offset to 1 mm.
Setting the starting point of the print	Sets the starting point of the printing area.
Format: Rm,n	m is the horizontal offset. Possible value is 0...2048 n is the vertical offset. Possible value is between 0 ...2048.
Example: R24,24	Sets an initial offset on X and Y of 3 mm.
Setting the print direction	Sets the position of the image during print.

Format: **ZT** or **ZB** Normal image
Image rotated to 180°

Set date and hour The command is used to set the real-time clock of the printer.

Format: **TSm,d,y,h,m,s** m month (1...12)
d day (1...31, validity of the date being checked)
y year - the last two digits (0...99).
h hour (0...23)
m minutes (0...59)
s seconds (0...59)

Example: **TS10,2,01,14,10,10** Sets clock to 2 October 2001, 14:10:10

Setting the form of the date The command sets the mode in which the string will generate the current date.

Format: **AxBvC** With capital letter the fields for the date have been marked. A,B and C may have the following values, which may be used not more than once:

- Y2** or **Y4** The current year, marked with 2 or 4 digits
- ME** or **MN** The current month shown in three letters or two digits.
- DD** The current day of the month.

The small letters mark the spaces between the fields. They are entered together with the symbol which we wish to use.

Example: **TDdd-me-y4** This would generate a date of the type 02- Sep-2001

Setting the format of the hour The command sets the mode in which the current hour will be generated by the string

Format: **AxBvC** Schematically the fields of the hour have been marked with capital letters. A, B and C can have the following values which may be employed not more than once.

- H:** The current hour.
- M:** The current minute.
- S:** The current second.

The small letters are used to designate the spaces between the fields. They are entered immediately after the symbol which we wish to use.

Example: **TTh:m:s** This will generate a string of the type 15:30:20.

B. Working with variables and counters

Defining a counter Offers the option to define up to 8 counters, which are whole digit variables, the values of which changes automatically after printing at a previously set rate. Initialization starts with the command '?' It is used alone or in combination with other variables and counters when generating a text or a bar-code.

Format: **Ca, b, c[d], e f**

- a** Logical number of the counter (0..7)
- b** Maximum Length (1..63)
- c** Alignment. Possible values:
 - N** No alignment. The true length is used.
 - R** The counter string is right aligned while on the left the maximum length is set joined by the fill-in symbol.
 - L** The counter's string is left aligned while on the right the maximum length is set joined by the force justify symbol.
 - C** The string of the counter is centered while on the left and right ends to the set length the fill-in symbols are joined.
- d** The additional symbol to the previous argument. If not entered a space will be included.
- e** Text prompt. This is string closed by inverted commas not longer than 25 symbols. At the initialization of the counter the printer will send this text via the serial port.

Example: **C1, 6, L, "Name:"** Defines counter number 1 with a maximum length of 6 bites, left aligned with spaces.

Initialization of variables and counters After this command the printer asks for initialization values for the defined counters and variables in the order of their logical numbers. After each entry the printer sends a text prompt via its serial port. If a longer string is sent it will cut off from the right end. Empty strings will call out the old value of the counter or variable. Initializing a counter with a string, which cannot be interpreted as a positive number will be rejected.

Format: ?

C. Generating a graphic image

Generating a text The command is used for inserting textual information in the image.

**Format: Aa, b, c, d,
e, f, g, h**

- a.** Starting coordinate on X for the upper left angle of the text: 0...2047
- b.** Starting coordinate on Y for the upper left angle of the text: 0...2047
- c.** Text orientation: 0=0, 1=90°, 2=180°, 3=270° where rotation is clockwise.
- d.** Font selection, where the following values are possible:
 - 1:** 8 x 12 dots
 - 2:** 10 x 16 dots
 - 3:** 12 x 20 dots
 - 4:** 14 x 24 dots
 - 5:** 32 x 48 dots

d can be a Latin letter in which case it is a name of a loadable font. The size of the symbols are there contained. Around each of the in-built fonts there is a white frame 1 dot wide so that the printable size is actually 2 points bigger than the size stated above.

- e.** Selection of a multiplier for X of the font. Possible values are 1...8.
- f.** Selection of a multiplier for Y of the font. Possible values are 1...9.
- g.** Printing mode: **N** - normal, **R** - inverted, **B** - bold, **W** - inverted bold.
The loadable font can be printed only in a normal mode.
- h.** Text data. The format for generating a text and a bar-code is the same and is described further on.

**Example: A10, 10,
1, 3, 2, 2, N,
“Something”**

will create an image of the text “Something” from the coordinate (10,10) rotated to 90° with font 12 x 20 multiplied times 2 in a horizontal and vertical direction. The text is not inverted.

Generating bar-codes

The command is used for inserting a bar-code in the image

**Format: Ba,b,c,d,e,
e, f, g, h,[i],j**

- a.** Starting coordinate on X for the upper left angle of the text: 0...2047
- b.** Starting coordinate on Y for the upper left angle of the text: 0...2047
- c.** Text orientation: 0=0, 1=90°, 2=180°, 3=270° where rotation is clockwise.
- d.** Selection of the type of bar-code for printing - text from 1 to 3 symbols. The following values are possible:

String	Bar-code type
3	Code 39
3C	Code 39 with control digit
9	Code 93
0	Code 128UCC
1	Code 128-automatic A,B,C mode
K	Codebar
E80	EAN8
E82	EAN8 with 2 additional digits
E85	EAN8 with 5 additional digits
E30	EAN13
A30	EAN13 with onternal control digit
E32	EAN 13 with 2 additional digits
E35	EAN13 with 5 additional digits
2G	German postal code
2	Interleaved 2 of 5 (ITF)
2C	ITF with a control sum fopr module 10
2	DITF with a control digit duplicated with text
P	Postnet
1E	UCC/EAN128
UA0	UPC A
UA2	UPC A with 2 additional digits
UA5	UPC with 5 additional digits
UE0	UPC E
UE2	UPC E with 2 additional digits
UE5	UPC E with 5 additional digits
2U	UPC interleaved 2 of 5
L	Plessey (MSI-1)
M	MSI-3 with a control sum for module 10

- e. Setting the thickness of the narrow bar in dots. Possible values 1...6.
- f. Setting the thickness of the wide bar in dots. Possible values 2...10, where the value must be bigger than the previous parameter. Some of the bar-code demand additional restrictions.
- g. Height of the bar-code in dots. Possible values are between 24...1000.
- h. Duplicate info in textual form or not: N-no, B-yes.
- i. A non-compulsory parameter, showing the alignment of the duplicating text in relation to the bar-code. Acceptable only if the preceding parameter has a B value. Values: C- centered, R-right aligned (by default the text is left aligned).

- j. Data for imaging. The format is similar to the generation of text and bar-code and is described further in the text. When the bar-code functions with a set number of symbols the command will be rejected at an unacceptable symbol. The same is valid in the case of invalid bar-code lengths demanding a certain number of symbols.

Example: **B0,0,0,Es0,2,3,60,B,"123456789012"** will create a bar-code image of the EAN13 type with a starting coordinate (0,0), not rotated, with bars 2 dots wide, 60 dots high with a duplicating text with content: "123456789012".

Drawing a There are three commands designed for this operation. LO prints in black, LE inverts the dots located below the line (in the XOR mode), while LW prints, unconditionally, in white.

Format: LOa,	a Starting coordinate for X:0...2047
b,c, d or LEa,	b Starting coordinate for Y:0...2047
b,c,d, or	c Size for X: 1...2047
LWa,b,c,d	d Size for YL:1...2047

Example: **LO10,10,100,200** Draws a rectangle with coordinates (10,10), (110,10), (110,210) and (10, 210) in black.

Drawing a diagonal line

Format: LS[m]a,b,c,d,e	m Non-compulsory parameter. Value E: mode XOR, W:white
	a Starting coordinate for X:0...2047
	b Starting coordinate for Y:0...2047
	c Line thickness: 1...80
	d End coordinate for X: 0...2047
	e End coordinate for Y: 0...2047

Example: **LSE10,10,8,100,200** Draws a line from coordinate (10,10) to (100,200) 8 dots thick which inverts the image over which it runs.

Drawing a frame The command generates a rectangular frame with a set line thickness.

Format: Xa, b,c,d,e	a The X coordinate of the right angle: 0...2047
	b The Y coordinate of the right angle: 0...2047
	c Frame thickness: 1...80. Thickness is at the expense of the inner area.
	d: X coordinate of the opposite angle:0...2047
	e: Y coordinate of the opposite angle: 0...2047

Example: **X10,10,3,360,250** Draws a rectangle with a size of 250 x 240 and frame thickness of 3 dots.

Direct printing of graphics The command permits the screening of a graphic image in the memory of the printer, which has not been saved there in advance.

Format: **GWa,b,c,d,e**

a X coordinate of the upper left angle: 0...2047
b Y coordinate of the upper left angle: 0...2047
c Horizontal size in units of 8 dots (bytes)1...127.
d Vertical size in dots: 0...2047
e Graphic lines. This is c*d bytes of information, 8 dots per byte where bit 1 is a black dot. Data is sent in horizontal lines from left to right. CR and LF are added at the end of a all data.

Format of the textual information for commands A(text) and B (barcode)

The input data for the commands A and B is a string which can be formed by the joining of a free text the current date and hour as well as some of the defined and initialized counters and variables in the order and quantity as required by the user. The separate elements are joined together in the order of their description from left to right.

Their encoding is as follows:

Free text:

This is entered directly and is closed by inverted brackets. If a bracket has to find a place in the text it must be preceded by ‘/’.

Current date:

It is coded with TD[m], where m is not a compulsory whole number from -3500 to 3500 setting the offset size in relation to the current date.

Current hour:

Coded with TT.

Variable:

Format:

n Number of the variable.

Vn [Modifiers]

Instructions for separating some of the symbols from the variable. Their number is arbitrary. If they are missing the variable is added as per definition and initialization without additional processing. The printer performs the following modifiers:

>

Cuts off the string all leading symbols which are identical to the symbol following the mark of the modifier. May also be used for cutting off leading zeros or spaces.

<

Cuts off the string the end symbols which are identical to the symbol following the mark of the modifier.

Rn

Cuts off the symbols to the left of n.

Ln Leaves the last n symbols in the string
Mn.n Separates n symbols from the string starting from the position m.
If the string can be interpreted as a whole number cuts off the leading zeros.

Counters:

Format: **n** Logical number of the counter

Cn[Modifiers]

Modifiers:

Their meaning and functions are the same as with the variables. The order in which the printer processes the variables and the counters is as follows:

- The present values of the counter/variable is taken as a starting point.
- Its formatting is performed depending on the way it is defined with the command V or C.
- All modifiers are executed from left to right.
- The resulting string is added to the end of the string, resulting from the processing of the previous elements.

Examples:

“Date:”TD” Time:”TT V0><C1L3 will generate: Date:02 OCT.2001 Time 16.30

V0><C1L3 will create a string from the variable V0, which is cleared of leading and end intervals as well as the left 3 symbols from the counter C1.

V0L1V0M3.2V0R1 will create a string, which will include the first, third, fourth and last symbol of the variable V0.

D. Working with forms

Starting to save a new form This command starts the entry of a new form in the operational memory of the printer. All valid commands which are sent to the printer between this command and FE will be saved in this form. If any of the commands is rejected due to syntax error because it has not been accepted in a form it will not be saved. If there is a previous form with this name it must be deleted with FK - in the opposite case the command will be rejected.

Format: **FS”Name”** Name is the name of the file which have at the most 8 symbols. All symbols with ASCII codes are acceptable - between 32 and 127 including without the symbol ‘*’. Small and capital letters are not distinguished so that “Test” and “TEST” are one and the same form.

Example: **FS”Test”**

End of form The command puts an end to the saving of the form it is registered in the list of forms and is ready for loading and execution. If before the command FE the printer is switched OFF the information from the form entered so far is lost and the memory space it has covered is set free. If no saving of a form is started the command will be rejected.

Format: **FE**

Loading of a form The command announces the information entered earlier as active. From this point on the information in question will be executed automatically at each command for printing. If other commands have also been dispatched to the printer the printed label will be the joint result of the execution of all commands related to the form. The closing of the activity of the form comes when a new form is loaded or with the commands M or N. Of course, the result will be the same when the form is deleted.

Format: **FR**"Name"
Name: The name of the form. A form with this name must be loaded into the memory.

Example: **FR**"Test"

Deleting a form The command deletes existing form or all forms. The engaged memory after this is freed.

Format: **FK**"Name"
Name: Name of the form - a form of that name must be saved in the memory. If '*' is entered as a name all forms will be deleted.

Information on the forms The command initiates the printing of all loaded forms or the content of one of them.

Format: **FI** Prints a list of all forms.

FI"Name" Prints the content of the form "Name".

E. Working with graphic files

Loading a new graphic Saves a new graphic file in the memory of the printer. The rules concerning names are the same as with the forms. The command will be rejected if there is a graphic file of that name or the entered size of the file is greater than the size of the free operational memory. The file must be in the PCX format, monochrome - in any other case it will not be loaded. It can be produced in different programs under Windows - for example PhotoShop.

Format: **GM"Name"**,

n Name: The name under which the graphic file will be saved in the memory of the printer.
n The length of the file (not more than 32768 bytes). After the command the set quantity of bytes must be sent to the printer.

Example: **GM"Logo1",3530** The saving of a graphic file under the name "LOGO1" will begin (with a length of 3530 bytes).

Drawing out of a graphic file The command starts the printing of a graphic file, stored in the buffer of the printer under that name.

Format: **GGa,b,"Name"**
a X coordinate of the upper left corner of the graphic image (0...2047)
b Y coordinate of the upper left corner of the graphic image (0...2047)
Name: Name of the graphic file

Example: **GG20, 150,"Logo"**

Deleting graphic files The command deletes an existing graphic file or all graphic files. After deletion the memory is freed.

Format: **GK"Name"** **Name:** The name of the file (a file of that name must be found in the memory).

Information on loaded graphic files Prints out a list of all loaded graphic files.

Format: **GI**

F. Working with loadable fonts

Loading a font The command is used for loading additional fonts in the printer. The loadable fonts may contain from 1 to 256 symbols not necessarily arranged in a fixed order. You can create your own fonts using the syntax of the command described further on or you may use ready programs for the purpose - for example Soft Font Downloader Utility.

Format: **ES"Name"p₁p₂p₃a₁b₁c₁D₁a₂b₂c₂D₂...a_nb_nc_nD_n**

Name: The name of the font - one Latin letter.

p₁ One byte - the number of symbols in the font. Possible value is 0...225, which corresponds to 1...256 symbols.

p₂ One byte - rotation of the font. Only a values of 00h is possible (not rotated)

p₃ One byte - the height of the font in dots. From 1 to 255

a₁ One byte - ASCII code of j loaded symbol. From 0 to 255.

b₁ One byte - distance to the next symbol in dots. From 0 to 255.

c₁ One byte - width of the j loaded symbol in units of 8 dots each. From 0 to 255.

D₁ Data on the j symbol. (**p₃** * **c₁**) bytes arranged in the order line by line. from left to right where each bite corresponds to a dot, "1" are black dots.

Deleting

fonts The command deletes an existing loadable font or all fonts. The engaged memory is freed.

Format: **EK**"Name" Name of the font. String which consists of only one letter, which must be found in the memory of the printer. If as name '*' is entered all loadable fonts will be deleted.

Information on

the loaded fonts A list of the loaded fonts is printed out.

Format: **EI**

G. Clearing the memory

Clearing the

operational memory

The command leads to the deletion of the whole information loaded into the printer, including forms, graphics, and fonts. All adjustments to the printer, accessible via commands acquire their default values.

Format: **M**

De-activation of the current form and deletion of the graphic buffer

The command clears the memory where the image for printing is generated and places the printer in the mode "working without active forms". The command may be used after an error when there are suspicions that the graphic buffer has not been cleared or if we wish to generate an image directly via commands and without the use of forms.

Format: **N**

Setting the printer to its default settings

The command sets the printer to given adjustments by default. For example 75mm/c printing speed, density of print 6, length of the label 200 dots, initial offsetting by X and Y = 0, width of the label as set by configuration key Sw5, size of the black strip 40 dots, hour format - M:H:S. format of the date- DD-MN-Y2 and language - English.

Format: **RESET**

H. Print

Printing a label

The command initiates the printing out of the contents of the printer's graphic buffer. After the completion of this action it is automatically cleared and ready for generating a new label. When working with sticker labels after the end of the printing session the last label is pushed out of the printer in a way so that it is completely visible and ready for use.

Format: **P[m,]n**

m The number of identical labels which will be printed out. The entering of a value greater than 1 is an option when working with a form, which uses counters. After printing a certain number of labels the counters automatically change their values according to the rules set when they were defined and the new group of labels is printed with the new values. Possible value: 1...1000.

n The number of absolutely identical labels for print. The sum quantity for this command will be $m*n$. Possible value: 1...1000.

The command with only one parameter is used for printing a label resulting from command, directly sent to the printer. The active form is ignored. The parameter indicates the number of identical labels demanded.

Example: **P2,3**

This command will print 6 labels of which the second 3 will have new counter values.

Resuming interrupted printing

If the last printing command has been completed successfully the command will activate no action on the part of the printer.

If, however, the last printing session has been interrupted you may activate its continuation from the point of interruption in order to get the required number of labels.

Format: **PC**

1. *Diagnostics and returning of data*

Printing out of diagnostic data This command activates the printing of data on the status of the printing head as well as the model of the printer, available free memory the baud rate of the serial port and the values of the current printer settings.

Format: **U**

Returning data on the engaged and free printer memory The serial port transfers data in one line on: **a,b,c,d**, where:
a Is the memory, engaged with forms, presented in bytes
b Is the memory, engaged with graphics, presented in bytes
c Is the memory engaged with fonts, presented in bytes
d Is the free memory in bytes.

Format: **UM**

Returning data on loaded forms The first form of the command returns a list of the loaded forms in the memory of the printer, which has the following structure:
b The number of the loaded forms. 3 digits.
Form₁ The name of the first form. From 1 to 8 symbols.

Format: **UF** or **FI"NAME"** Each element of the above structure ends in <CR><LF> The second form of the command permits the printer to deliver the content of the form under the entered name. The form must have been loaded there in advance. Data is sent line-by-line, lines being divided by the combination <CR><LF>. After the last line one byte is sent with the ASCII code 00h.

Returning data on loaded graphics The first form of the command returns a list of the graphics, loaded in the printer. It has the following structure:
n The overall number of loaded graphics. 3 digits.
Gr₁ The name of the first graphic image. From 1 to 8 symbols.
...
Gr_n Name of the "n" graphic image.

Format: **UG** or **GI"NAME"** Each element of the above structure ends in the combination <CR><LF>. The second form of the command makes the printer generate the contents of the graphic image under the given name.

The image must have been loaded in the memory in advance. The data is sent in the following format:

$n_1 n_2 D$ where:

n_1 is the elder ranking part of the overall number of bytes in the image,

n_2 The junior ranking part of the bytes. This number is $(n_1 25 + n_2)$.

D The data from the image in a binary form. The number is defined by n_1 and n_2 . The format is monochrome PCX.

Returning data The first form of the command returns a list of the fonts, loaded on loaded fonts in the printer having the following structure:

n Overall number of the loaded fonts. 3 digits.

$Font_1$ Name of the first font. One symbol.

...

$Font_n$ Name of the "n" font

Format:

UE or

EI"NAME"

Each element of the above structure ends in $\langle CR \rangle \langle LF \rangle$. The second form of the command makes the printer show the contents of the font under that name. The font must have been loaded in the printer in advance. The data is sent in the following format:

$n_1, n_2, p_1 p_2 p_3 a_1 b_1 c_1 \dots a_n b_n c_n$ where:

n_1 Elder ranking part of the number of bytes in font.

n_2 Junior ranking part of the number of bytes - i.e. $(n_1 * 256 + n_2)$

p_1 One byte - the number of symbols in the font.

p_2 One byte - rotation of the font. Always 00h (not rotated)

p_3 One byte - the height of the font in dots.

a_1 One byte - ASCII code of j loaded symbol.

b_1 One byte - distance to the next symbol in dots.

c_1 One byte - width of the j loaded symbol in units of 8 dots each.

D_1 Data on the j symbol. $(p_3 * c_1)$ bytes arranged in the order line-by-line from the left.

1 DATECS

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