

THERMAL and
THERMAL TRANSFER
PRINTERS

**PROGRAMMING
MANUAL
EL5/EL7**



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PRINTERS MODELS

This manual refers to printers equipped by an electronic board with 32-bit technology, hereinafter called **Electronic 5** (EL5) or **Electronic 7** (EL7)

it includes models:

Paper width	desktop	inline	print on product
60 mm	WITTY 1900	AH53 – 8	FH2002–C*
	WITTY 2000	BH 53 – 8	FH2002–I*
	WITTY 2000STW	AH53 – 12	FH3002–C*
	WITTY 2000_280	BH53 – 12	FH3002–I*
	WITTY 2000K*		
	WITTY 3000 WITTY 3001		
90 mm		BH 80	
110 mm	SMART 2000	AH 870	
	SMART 2000STW	AH 871	
	SMART 2000_280	AH 106	
	SMART 2000K*	AH 1271	
	SMART 2001 SMART 3001		
180 mm	SMART 2006	AH 2006	

(*). Some commands or features might be unavailable.

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MANUAL CONVENTIONS

This manual contains software programming commands available for electronic boards named “EL5” and “EL7” mounted into **italora** printers.

Following printing models can have differences regarding the totality of the commands documented in present manual:

- ‘K’, ‘KM’, ‘KA’ series (i.e. Witty 2000 K)
- STW, 2000_280 (i.e. Smart 2000 STW)
- FH devices for direct printing (i.e. FH 3002 – I)

The commandos who set up parameters maintained in permanent memory (therefore maintained also after printer is turned off) are identified with the symbol ☺.

HEAD RESOLUTION and PRINT WIDTH

MODEL	RESOLUTION (Dots / mm)	WIDTH	
		(mm)	(dots)
BH 53 – 8	8 s. 7.52	51.1	384
BH 53 – 8 GM	8 s. 7.52	51.1	384
BH 53 – 12 GM	12	54.2	640
BH 80	8	80	640
BH 80 GM	8	80	640
AH 53 – 8	8 s. 7.52	51.1	384
AH 53 – 8 GM	8 s. 7.52	51.1	384
AH 53 – 12 GM	12	54.2	640
AH 106 – 8	8 s. 7.52	102	768
AH 106 – 8 GM	8 s. 7.52	102	768
AH 870	8 s. 7.52	102	768
AH 871	8 s. 7.52	102	768
AH 871 GM	8 s. 7.52	102	768
AH 1271	12	108.5	1280
AH 2006 GM	8	168	1344
WITTY 1900	7.52	51.1	384
WITTY 2000	8 s. 7.52	51.1	384
WITTY 2000 280	8	56	448
WITTY 2000 STW	8	56	448
WITTY 3000	12	54.2	640
WITTY 3001 GM	12	54.2	640
SMART 2000	8 s. 7.52	102	768
SMART 2000 280	8	104	832
SMART 2000 STW	8	104	832
SMART 2001	8 s. 7.52	102	768
SMART 2001 GM	8 s. 7.52	102	768
SMART 3001	12	108.5	1280
SMART 3001 GM	12	108.5	1280
SMART 2006 GM	8	168	1344
FH 2002-I	8	56	448
FH 3002-I	12	54.2	640
FH 2002-C	8	56	448
FH 3002-C	12	54.2	640

PRINTING TOP SPEED

PRINTER MODEL	SPEED mm / sec
BH 53 – 8	170
BH 53 – 8 GM	300
BH 53 – 12 GM	200
BH 80	170
BH 80 GM	300
AH 53 – 8	170
AH 53 – 8 GM	300
AH 53 – 12 GM	200
AH 106 – 8	170
AH 106 – 8 GM	170
AH 870	170
AH 871	300
AH 871 GM	300
AH 1270	200
AH 1271	200
AH 2006 GM	200
WITTY 1900	170
WITTY 2000	170
WITTY 2000 280	170
WITTY 2000 STW	170
WITTY 3000	200
WITTY 3001 GM	200
SMART 2000	170
SMART 2000 280	170
SMART 2000 STW	170
SMART 2001	250
SMART 2001 GM	300
SMART 3001	200
SMART 3001 GM	200
SMART 2006 GM	200
FH 2002-I	200
FH 3002-I	200
FH 2002-C	200
FH 3002-C	300

FRONTAL LIGHTS

Frontal panel of **italora** printers has 3 possible configurations of LEDs and LCD.

1. Printers not equipped with DISPLAY

- 1 Red led
- 1 Green / Orange led

2. Printers equipped with DISPLAY

- 1 Red led
- 1 Green led
- 1 Orange led
- backlight LCD

3. Printers not equipped with DISPLAY

- 8 colors backlight LCD

MEANING OF LED LIGHTS

ON-LINE NORMAL STATE

In this printer state the led conditions are:

- Red Led: **fixed Red**
- Green Led: **fixed Green**

END OF PAPER STATE

In this printer state the led conditions are:

- Red Led: **fixed Red**
- Green Led: **blinking Green - Off**

END OF RIBBON STATE

In this printer state the led conditions are:

- Red Led: **fixed Red**
- Green Led + Orange Led: **blinking** **Display**
- Green / Orange Led: **blinking Green - Orange** **NoDisplay**

HEAD HOT TEMPERATURE STATE

In this printer state the led conditions are:

- Red Led: **fixed Red**
- Orange Led: **blinking Orange - Off** **Display**
- Green / Orange Led: **blinking Orange - Off** **NoDisplay**

PROGRAMMING SYNTAX ERROR STATE

In this printer state the led conditions are:

- Red Led: **fixed Red**
- Orange Led: **fixed Orange** **Display**
- Green / Orange Led: **fixed Orange** **NoDisplay**

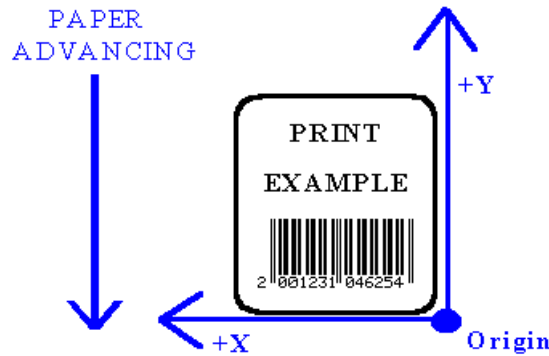
HOME POSITION DEFINITION

In this section we define the home position of label printing area and of all printed elements (texts, barcode, lines, rectangles, logos and so on). Each element is put into label by its co-ordinates X and Y.

PRINTING AREA HOME POSITION

Next figure shows the printing area home position on label surface.

Consider the paper advancing direction as shown in the next figure: the co-ordinates X and Y have a positive direction as shown by arrows.



OFFSET OF X,Y COORDINATES OF FIELDS HOME POSITION

With this command it's possible to set an offset value for X,Y coordinates for home position of ALL fields in the label.

Syntax is:

?B6&sX,sY

parameters have the next meaning:

- s** "+" or "-" sign
- X** X coordinate offset (dots)
- ,** Comma - separator character
- Y** Y coordinate offset (dots)

when printer is turned on offset values is = 0,0

Example:

'text field PRIMO set at X,Y = 15,25

?B6&+0,+0

?52&10,15,25,2,11;PRIMO

'text field SECONDO set at X,Y = 15,25

?B6&+15,+25

?52&10,0,0,2,11;SECONDO

'text field TERZO set at X,Y = 30,50

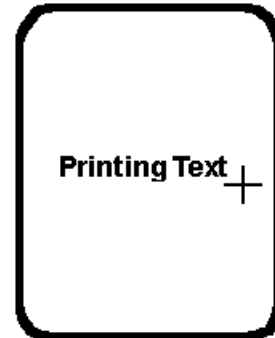
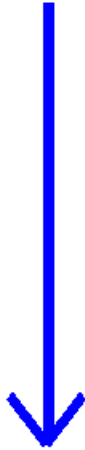
?B6&+15,+25

?52&10,15,25,2,11;TERZO

TEXTS AND BARCODES HOME POSITION

Two next figures show the home position of texts and barcodes, referring to direction of paper advancing. The origin of printing elements is marked by “+”

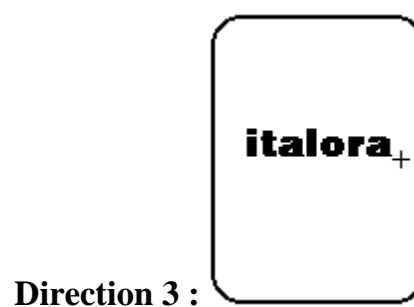
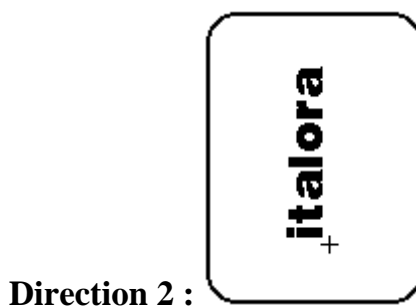
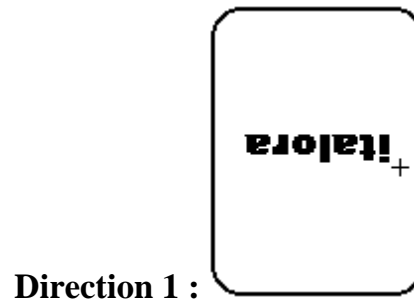
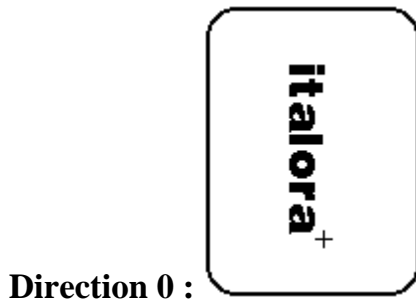
PAPER
ADVANCING



PRINTING DIRECTIONS

In this section we will show the four printing directions for texts and barcodes. The origin positions of printing elements are marked by “+”.

NOTE: The paper advancing is the same of the above examples.



TEXT ALIGNEMENT SETUP

As you can see into printing direction above examples, when you are writing in direction 0 or in direction 3 the origin of texts is at the end of words you must write. This situation may be uncomfortable if you have to align on the first letter some texts placed on different writing lignes.

With the command ?81& (Special Alignement) it's possible to modify the origin of texts in directions 0 and 3. When you use the Special Alignement you are in the next situation:



Dir. 0



Dir. 3

As you can see, when using Special Alignement the texts origin co-ordinates refer always to FIRST letter into text

NOTE: The special alignement modifies only TEXTS origin: the origin positions of all other printing elements (such as barcodes, lines, rectangles, graphic, etc...) will remain unchanged.

OPERATIVE COMMANDS

When printer is OnLine, it is waiting for receiving some command to compose elements onto label. Commands, that can be sent via serial or parallel port depending on printer model, are ASCII characters strings having a particular syntax.

Each command starts with four specific ASCII characters and ends with characters CR + LF that are Carriage Return (ASCII code = 13 or 0D hexadecimal) and Line Feed (ASCII code = 10 or 0A hexadecimal). All characters following LF are skipped and passed over till another command comes.

The general syntax of printer commands is:

?XX& CR LF

where XX is a two digit number of command you are programming.

Commands of **italora** printers divide into two families:

- Commands for **immediate drawing and print** of a label
- Commands for **storing and print** of a label

IMMEDIATE DRAWING COMMANDS

These commands compose and print a label, but they don't store it into permanent memory. It means the label will be lost at power off.

LAYOUTS

These commands compose a label and store it into permanent memory. The label will stay into memory also when you turn off printer.

In this manual we refer to stored labels calling them **LAYOUTS**. The layouts are named with the uppercase letters and they can be activated with the specific command.

Format names follow alphabet letters:

26 layouts, (A...Z) each containing up to 100 fields

In this manual all commands and their syntax will be explained.

TEXTS

LIST OF INTERNAL FONT FOR TEXTS

italora printers have a set of internal Font stored into permanent memory; fonts are available for texts printing. Each Font has a sequential index (G) that let you recall it.
Next tables show the available Fonts.

BASE fonts

ALL MODELS BUT: witty 2000_280 – smart 2000_280 witty 2000 STW – smart 2000 STW			
INDEX	DIMENSIONS (in DOT)	FONT	SPACING
G = 0	5 x 7	Standard	fixed
G = 1	5 x 5	Micro	fixed
G = 2	height 32	Arial	proportional
G = 3	8 x 13	Draft	fixed
G = 4	32 x 48	Motor	fixed
G = 5	height 45	New Century	proportional
G = 6	88 x 88	Title	fixed
G = 7	height 19	Compact	proportional
G = 8	5 x 7 reverse	Standard	fixed
G = 9	5 x 5 reverse	Micro	fixed
G = 10	height 32 reverse	Arial	proportional
G = 11	8 x 13 reverse	Draft	fixed
G = 12	32 x 48 reverse	Motor	fixed
G = 13	height 45 reverse	New Century	proportional
G = 14	88 x 88 reverse	Title	fixed
G = 15	height 19 reverse	Compact	proportional
G = 16	height 31	Century	proportional
G = 17	height 49	Arial Rounded	proportional
G = 18	height 63	Bookman	proportional
G = 24	height 31 reverse	Century	proportional
G = 25	height 49 reverse	Arial Rounded	proportional
G = 26	height 63 reverse	Bookman	proportional

NOTE:

Font “Title” prints only numeric digits, uppercase letters and characters: BLANK, ‘ * ’, ‘ / ’, ‘ – ’

witty 2000_280 - smart 2000_280
witty 2000 STW - smart 2000 STW

INDEX	DIMENSIONS (in DOT)	FONT	SPACING
G = 0	5 x 7	Standard	fixed
G = 1	5 x 5	Micro	fixed
G = 2	16 x 24	Big	fixed
G = 3	8 x 13	Draft	fixed
G = 4	32 x 48	Motor	fixed
G = 5	height 45	New Century	proportional
G = 6	height 32	Arial	proportional
G = 7	height 19	Compact	proportional
G = 8	5 x 7 reverse	Standard	fixed
G = 9	5 x 5 reverse	Micro	fixed
G = 10	16 x 24 reverse	Big	fixed
G = 11	8 x 13 reverse	Draft	fixed
G = 12	32 x 48 reverse	Motor	fixed
G = 13	height 45 reverse	New Century	proportional
G = 14	height 32 reverse	Arial	proportional
G = 15	height 19 reverse	Compact	proportional
G = 16	height 31	Century	proportional
G = 17	height 49	Arial Rounded	proportional
G = 18	height 63	Bookman	proportional
G = 24	height 31 reverse	Century	proportional
G = 25	height 49 reverse	Arial Rounded	proportional
G = 26	height 63 reverse	Bookman	proportional

Besides base fonts, that are compatible with old production printers, there are 12 pre-loaded ADDITIONAL fonts too; these 12 fonts have proportional spacing.

INDEX for printer firmware release <J2.10	INDEX for printer firmware release >=J2.10	Height dim. in DOTs related to 'A' letter	FONT
G = 32	G = 32	8	Alka 3,5
G = 33	G = 33	12	Alka 5
G = 34	G = 34	24	Alka 8
G = 35	G = 35	8	Rex 3,5
G = 36	G = 36	14	Rex 5
G = 37	G = 37	24	Rex 8
G = 38	G = 38	36	Similar to "Arial"
G = 39	G = 39	48	Similar to "Uni Narrow"
G = 50	G = 40	64	Similar to "Arial Narrow"
G = 51	G = 41	80	Similar to "Switz Narrow"
G = 52	G = 42	112	Similar to "Switz Narrow"
G = 53	G = 43	168	Similar to "Switz Narrow"

More than 12 additional fonts factory-loaded it is possible to use, after they are downloaded into printer memory, some other fonts types that may be combined with the ones listed in previous table. These fonts are:

Height dim. in DOTs related to 'A' letter	FONT
8	Similar to "Courier New"
12	Similar to "Courier New"
20	Similar to "Courier New"
24	Similar to "Times New Roman"
32	ITL Tah - Similar to "Tahoma"
32	ITL Tah - Similar to "Tahoma"
64	ITL Tah - Similar to "Tahoma"
72	ITL Imp - Similar to "Impact"
128	ITL Imp - Similar to "Impact"

For firmware release minor than **J2.10** G index of an additional font starts from G=32 and, with a recurrence equal to 8, it allows to get reverse text
i.e.

$G = 41 = 33 + 8$, creates a text with ALKA 3,5 fonts in reverse mode

For firmware release equal or greater than **J2.10** G index of an additional font starts from G=32 and, with a recurrence equal to 112, it allows to get reverse text
i.e.

$G = 41 = 33 + 112$, creates a text with ALKA 3,5 fonts in reverse mode

To make new fonts sets you may use Etik Full (licence mode).

To get new downloadable fonts types or sizes you may ask to **italora**.

INTERNAL BASE FONT PRINTING EXAMPLES

<u>Standard</u>	0123456789ABCDEFGHIJKLMNQRSTUUVZ
<u>Micro</u>	0123456789ABCDEFGHIJKLMNQRSTUUVZ
<u>Big</u>	0123456789ABCDEFGHIJKLMNQRSTUUVZ
<u>Draft</u>	1234567890ABCDEFGHIJKLMNQRSTUUVZ
<u>Motor</u>	0123456789ABCDEFGHIJKLMNQRSTUUVZ
<u>New Century</u>	0123456789ABCDEFGHIJKLMNQRSTUUVZ
<u>Arial</u>	0123456789ABCDEFGHIJKLMNQRSTUUVZ
<u>Title</u>	0 1 2 3 4 5 6 7 ABCDEFG
<u>Compact</u>	0123456789ABCDEFGHIJKLMNQRSTUUVZ
<u>Century</u>	0123456789ABCDEFGHIJKLMNQRSTUUVZ
<u>Arial Rounded</u>	0123456789ABCDEFGHIJKLMNQRSTUUVZ
<u>Bookman</u>	1234567890ABCDEFGHIJKLMNQRSTUUVZ

WARNING: In some examples the real proportions between different fonts are not respected.

MAGNIFICATION FOR FIXED AND PROPORTIONAL FONT

As you can see into above tables, all fonts have an originary specific dimension. However you can decide to magnificate (choosing if X dimension, Y dimension or both them) the originary character. The magnification can reach up to 8 times the originary dimension.

TEXT - IMMEDIATE DRAWING

This command let you compose a text on label. The text will be available for printing till graphic printing buffer is not erased.

Syntax is:

?52& D0 , X , Y , G , EE ; data

parameters have the next meaning:

D	Printing direction
0	Fixed character '0' (Zero); specific for texts
,	Comma - separator character
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
G	Font index
EE	Two numeric digit for magnification of base and height of character
;	Semicolon - separator character
data	Characters composing printing text

Example: **?52&20,130,120,3,23;Hi, how are you?**

This example composes text "Hi, how are you" on label at co-ordinates X=130, Y=120. Print direction is 2. Text is written with font n° 3 and every character is magnificated 2 times in width and 3 times in height.

STORING TEXTS IN PERMANENT MEMORY

Following commands let you store texts into permanent memory and make you able to compose them onto label to print them.

We can distinguish between two kinds of printing texts:

- FIXED texts
- VARIABLE texts

FIXED TEXTS PROGRAMMING

Fixed texts never change into layout; fixed text is linked to a layout and it's composed automatically each time layout is recalled. **italora** printers have a database that can store up to 50 fixed texts, each with a maximum length of 50 characters.

NOTE Database for fixed texts and for fixed barcodes is the same: pay attention to index of fields, do not assign the same index to different fixed data (see paragraph "Fixed Barcode programming")

Commands for fixed texts programming are:

- ?72&...
- ?73&...
- ?74&...

Let's see them in detail.

COMMAND ?72&

This command makes you able to store text into printer permanent memory and to compose it onto label.

Syntax is:

?72& N , I , D , X , Y , G , EE , F ; data

parameters have the next meaning:

N	Uppercase letter showing the layout you are programming
,	Comma - separator character
I	Field index into layout; correct values are: 0..99
D	Text printing direction
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
G	Font index
EE	Two numeric digit for magnification of base and height of character
F	Fixed text index; correct values are 0...49
;	Semicolon - separator character
data	Characters composing printing text

Example:

```
?72&B,6,3,100,50,5,11,0;This is fixed text n. 0  
?72&B,7,3,100,150,5,11,1;This is fixed text n. 1  
.....
```

This example stores two fixed text into database and gives them index 0 and 1; then the two texts are linked to layout B, with internal layout field index 6 and 7. Texts are composed on label with specified parameters.

COMMAND ?73&

This command makes you able to store a fixed text into permanent memory database; in this case text is not composed into print buffer.

Syntax is:

?73& F ; data

parameters have the next meaning:

F	Fixed text index; correct values are 0...49
;	Semicolon - separator character
data	Characters composing printing text

Example: ?73&2;Fixed text with index 2 into database
?73&3;Fixed text with index 3 into database

This example stores two texts into database and gives them index 2 and 3

COMMAND ?74&

Command ?74&... makes you able to select a text from database and to compose it on label, programming all printing parameters.

Syntax is:

?74& N , I , D , X , Y , G , EE , F

parameters have the next meaning:

N	Uppercase letter showing the layout you are programming
,	Comma - separator character
I	Field index into layout; correct values are: 0..99
D	Text printing direction
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
G	Font index
EE	Two numeric digit for magnification of base and height of character
F	Fixed text index; correct values are 0...49

Example: ?74&F,6,3,100,50,5,11,4

This example gets text with index 4 from database and links it into layout F; the text is composed into label at co-ordinates X=100, Y=50, with font generator n° 5 without magnification.

TEXT - VARIABLE

Variable texts are not fixed in advance, but they are empty spaces into label and they are filled with data at the moment of printing (maybe by a PC, a weight scale or some other serial device, or a mainframe or some other parallel device).

During the built of layout we have only to foresee the printing parameters of text, not the data to print.

Syntax is:

?53& N , I , D0 , X , Y , G , EE

parameters have the next meaning:

N	Uppercase letter showing the layout you are programming
,	Comma - separator character
I	Field index into layout; correct values are: 0..99
D	Text printing direction
0	Fixed character '0' (Zero); specific for texts
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
G	Font index
EE	Two numeric digit for magnification of base and height of character

Example: ?53&A,0,30,100,50,5,11

This example programs field n° 0 of A layout as come variable field; co-ordinates are X=100, Y=50, text direction is 3, font is n° 5 and no magnification.

SENDING OF VARIABLE DATA

After having programmed variable data into layout, it's possible to send data to printer.

Syntax is:

?25&data

parameters have the next meaning:

data Characters to print into variable field

WARNING:

You can insert a lot of variable fields into a layout; the order with which you program variable fields into layout must be the same of which you send data to print: the first one fills the first variable field, the second one fills the second variable field and so on till the last one.

When the last variable field is filled by the data arrived with ?25&... command the label is printed automatically, without any specific print command.

Example: See paragraph "Layout Programming Examples"

SENDING OF VARIABLE FIELDS WITH OR WITHOUT HEADING

This command makes you able to send variable data without the heading “?25&”.

This feature can be useful if you use some software package to read data from Data Base.

Syntax is:

?26&

there are no other parameters

After having received command ?26& the printer interprets all characters in input as variable data. Variable data string must be finished by control characters <Carriage Return> (having ASCII code 13).

The only command printers can recognize during this mode is command “?27&”, that makes the printers exit from the no heading mode.

Syntax is:

?27&

there are no other parameters

This command restore standard mode of manage of variable data, that is the one with heading “?25&”.

The programming of commands ?26& and ?27& is kept into permanent memory also after you turn off printer.

INDEXED VARIABLE FIELDS

Next command makes you able to send a data for a variable field to printer specifying its index too. With this feature it's possible to send data to printer without following the variable fields programming order.

Index of variable fields is given by the order of variable fields commands into layout programming list (see also command ?53&...)

The first variable field has always index = 0

Syntax is:

?A5&I , Data

and parameters mean:

I Index of variable field to fill. Correct values are: 0...99
Data Data string to print into variable field

Example: (suppose layout A contains 3 variable fields)

‘layout is selected and enabled

?05&A

?25&First field #1

?25&Second field #1

?25&Third field #1

‘ Here the first label is printed

?A5&2,Third field #2

?14&1

‘ Here the second label is printed

INDEXED VARIABLE DATA – VARIABLE FONTS

With this command you can send data to fill a variable field indexed by a numeric value to specify its position in label layout and select the font.

By this way it is possible to send variable data to printer away from fields order in label format.

Variable fields index is based on the sequences they appear in label format (see ?53&... command).

The first programmed variable field in the format has index = 0.

Syntax is:

?C5&I, F, Data

parameters have the next meaning:

I	Variable field index. Valid values: 0...99
F	Font index. (see fonts table)
Data	Data to write into variable field

Example: (let's us suppose A format has 3 variable fields)

'layout is selected and enabled

?05&A

?25&First field #1

?25&Second field #1

?25&Third field #1

' Here the first label is printed

?C5&2,3,Third #2

?14&1

' Here the second label is printed

READING OF VARIABLE DATA FROM DATABASE

If you have programmed some fixed texts into database and some variable field into layout, it's possible to send to the printer a command to read data from database and put it into variable field.

Syntax is:

?73&F

parameter means:

F Fixed text index to use as variable field

Example: See paragraph "Layout Programming Examples"

BARCODES

LIST OF AVAILABLE BARCODES

italora printers can print a lot of kinds of barcodes; you can decide if to print or not to print the human readable digits under barcode.

Each barcodes is characterized by a progressive index (C).

Below there are all kinds of barcodes available.

INDEX	KINDS of BARCODES	Notes
C = 0	2/5	
C = 1	2/5 i	interleaved
C = 2	EAN13	without check digit
C = 3	EAN13	with check digit
C = 4	EAN8	without check digit
C = 5	EAN8	with check digit
C = 6	3/9	without check digit
C = 7	CODABAR 2/7 MONARCH AA	
C = 8	CODABAR 2/7 MONARCH BB	
C = 9	CODABAR 2/7 MONARCH CC	
C = 10	CODABAR 2/7 MONARCH DD	
C = 11	3/9	with check digit
C = 12	UPC-B	without check digit
C = 13	UPC-A	with check digit
C = 14	128	
C = 15	EAN128	
C = 16	2/5 interleaved	with check digit
C = 17	UPC-E	6 characters data input
C = 18	CODABAR 2/7 MONARCH AB	
C = 19	CODABAR 2/7 MONARCH AC	
C = 20	CODABAR 2/7 MONARCH AD	
C = 21	CODABAR 2/7 MONARCH BA	
C = 22	CODABAR 2/7 MONARCH BC	
C = 23	CODABAR 2/7 MONARCH BD	
C = 24	CODABAR 2/7 MONARCH CA	
C = 25	CODABAR 2/7 MONARCH CB	
C = 26	CODABAR 2/7 MONARCH CD	
C = 27	CODABAR 2/7 MONARCH DA	
C = 28	CODABAR 2/7 MONARCH DB	
C = 29	CODABAR 2/7 MONARCH DC	
C = 30	3/9 - \$ syncro char	without check digit
C = 31	3/9 - \$ syncro char	with check digit
C = 32	EAN13 + ADDON 5	
C = 33	EAN13 + ADDON 2	
C = 34	CODE 32	Italian Pharmaceutical
C = 35	CODE PZN	
C = 36	CODABAR 2/7 MONARCH AA	check digit MOD 11
C = 37	CODABAR 2/7 MONARCH BB	check digit MOD 11
C = 38	CODABAR 2/7 MONARCH CC	check digit MOD 11
C = 39	CODABAR 2/7 MONARCH DD	check digit MOD 11
C = 40	<i>RESERVED – do not use</i>	
C = 41	CODE 93	

COMMANDS FOR BARCODES

BARCODES - IMMEDIATE DRAWING

This command let you compose a barcode on label. The barcode will be available for printing till graphic printing buffer is not erased.

Syntax is:

?52& D1 , X , Y , C , H ; data

parameters mean:

D	Barcode printing direction
1	Fixed character '1' (One); specific for barcodes
,	Comma - separator character
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
C	Type of barcode to compose
H	Height, in dot, of barcode
;	Semicolon - separator character
data	Characters composing printing barcode

Example: ?52&31,350,30,1,80;1234567890

This example composes a 2/5 Interleaved barcode (C=1) of height = 80 dots at co-ordinates X=350, Y=30. Printing direction is 3 and data is the string "1234567890".

STORING OF BARCODES INTO PERMANENT MEMORY

Next commands let you to store barcodes into permanent memory and to compose them into label. We have to distinguish between two types of printing barcodes:

- FIXED barcodes
- VARIABLE barcodes

FIXED BARCODES PROGRAMMING

Fixed barcodes never change into layout; fixed barcodes are linked to a layout and are composed automatically each time layout is recalled. **italora** printers have a database that can store up to 50 fixed barcodes, each with a maximum length of 50 characters.

NOTE: Database for fixed barcodes and for fixed texts is the same: pay attention to index of fields (see paragraph “Fixed Texts programming”)

Syntax is:

?78& N , I , D , X , Y , C , H , F ; data

parameters mean:

N	Uppercase letter showing the layout you are programming
,	Comma - separator character
I	Field index into layout; correct values are: 0..99
D	Barcode printing direction
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
C	Type of barcode to compose
H	Height, in dot, of barcode
F	Fixed barcode index; correct values are 0...49
;	Semicolon - separator character
data	Characters composing printing barcode; max 50 characters

Example: ?78&D,1,3,100,50,4,120,6;80574119

This example programs the field with index = 1 of layout D as fixed barcode; co-ordinates are X=100, Y=50, printing direction is 3, barcode is #4 (EAN8 without check digit), height is 120 dots, database index of string data is 6, string data is “80574119”

BARCODES - VARIABLE

Variable barcodes are fields that can change before the printing phase, such as a weight coming from a scale via serial or parallel port.

When we are building the layout we have to foresee only the parameters of variable barcode (coordinates, type, height, and so on...) but not at all the data string; this one will fill the field at the printing phase.

Syntax is:

?53& N , I , D1 , X , Y , C , H

parameters mean:

N	Uppercase letter showing the layout you are programming
,	Comma - separator character
I	Field index into layout; correct values are: 0..99
D	Barcode printing direction
1	Character '1' (One); fixed for barcodes
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
C	Type of barcode to compose
H	Height, in dot, of barcode

Example: ?53&C,3,31,100,50,5,200

This example programs field #3 of layout C as variable barcode; co-ordinates are X=100, Y=50, printing direction is 3, barcode type is #5 (EAN8 with check digit) and height is 200 dots.

SENDING OF VARIABLE DATA

After having programmed variable data into layout, it's possible to send data to printer.

Syntax is:

?25&data

parameters have the next meaning:

data Characters to print into variable field

WARNING:

You can insert a lot of variable fields into a layout; the order with which you program variable fields into layout must be the same of which you send data to print: the first one fills the first variable field, the second one fills the second variable field and so on till the last one.

When the last variable field is filled by the data arrived with ?25&... command the label is printed automatically, without any specific print command.

Example: See paragraph "Layout programming examples"

INDEXED VARIABLE FIELDS

Next command makes you able to send a data for a variable field to printer specifying its index too. With this feature it's possible to send data to printer without following the variable fields programming order.

Index of variable fields is given by the order of variable fields commands into layout programming list (see also command ?53&...)

The first variable field has always index = 0

Syntax is:

?A5&I , Data

and parameters mean:

- I** Index of variable field to fill. Correct values are: 0...99
- Data** Data string to print into variable field

Example: (suppose layout A contains 3 variable fields)

'layout is selected and enabled

?05&A

?25&First field #1

?25&Second field #1

?25&Third field #1

' Here the first label is printed

?A5&2,Third field #2

?14&1

' Here the second label is printed

WIDE AND NARROW PARAMETERS

Barcodes **3/9**, **2/5**, **2/5 i** and **2/7** use Wide and Narrow values to generate bars.

Wide value is the number of dots into a “large” bar.

Narrow value is the number of dots into a “thin” bar.

When printer is turned on Wide value is set to 2 and Narrow value is set to 1; if you program these parameters the new values keep valid till you program again the same command with different values or you turn off printer.

Syntax for command of **Wide** parameter is:

?09& W

parameter means:

W Value to give parameter: correct values are in the range 1 ... 16

Syntax for command of **Narrow** parameter is:

?10& N

parameter means:

N Value to give parameter: correct values are in the range 1 ... 16

**Example: ?09&5
?10&2**

With this example you are programming Wide = 5 and Narrow = 2.

HUMAN READABLE CHARACTERS

You can choose if to print or not to print the characters under a barcode.

If you choose not to print them, the space usually taken by digits is filled with the bars of barcode.

When you turn on the printer the human readable characters are set to on. Then you can program this feature and new settings keep valid till you program again the same command with a different value of parameter or you turn off printer.

Syntax is:

?13& N

parameter means:

N Correct values are 2 and 3
 2 : human readable character ON
 3 : human readable character OFF

Example: ?13&3

This way you turn OFF the human readable characters under all barcodes.

BARCODE MAGNIFICATION

You can choose to magnificate the original width of bars up to 9 times.

When you turn on the printer the bar magnification is set to 2.

Then you can program this feature and new settings keep valid till you program again the same command with a different value of parameter or you turn off printer.

Syntax is:

?11& M

parameter means:

M Magnification of bars into barcode. Correct values are in the range 1 .. 9

Example: ?11&4

This way you set barcode bars magnification to 4.

DISTANCE BETWEEN HUMAN READABLE TEXT AND BARS ☺

With next command you can set the distance between human readable text and bars of barcodes.
Factory default setting is 0 (zero).
Parameter value is expressed in DOT and will be kept into printer permanent memory.

Syntax is:

?B4&D

and parameter means:

D Distance (expressed in DOT) between bars and human readable text

CHARACTERS FILTER FOR CODE128 AND EAN128 BARCODES ☺

With next command you can filter (delete) up to 5 characters from bars and 5 characters from human readable text of CODE128 and EAN128 barcodes.
Filtered characters will never be printed into bars or text.
Settings will be kept into printer permanent memory.

Syntax is:

?F0&L,N,Ascii1,Ascii2, . . .

and parameters mean:

L	Location for filter. It can be: 0 filter for BARS 1 filter for TEXT
N	Number of characters you want to filter. Values are in the range 0 ... 5
Ascii1	Decimal ASCII code of character to filter
Ascii2	Decimal ASCII code of another character to filter
...	So on up to max five characters

Filtering operations for bars and text are independent; this mean you can filter different characters from bars and from text

Examples:

1. Filtering of characters with ASCII code 132 and 149 from human readable text below barcode:

?F0&1,2,132,149

2. Filtering of characters with ASCII code 123 (= '{') and 125 (= '}') from bars of barcode:

?F0&0,2,123,125

sent: 9876{ABC}
composed: 9876ABC

3. Reset of filtering operation from both bars and human readable texts:

?F0&0,0
?F0&1,0

STORING OF DATA FOR BARCODES CODE128 AND EAN128 IN PERMANENT MEMORY

Barcodes CODE128 and EAN128 can contain characters whose ASCII code is in the range 0...127 decimal

By ?55& command you can store into permanent memory the data (including control characters) to use into CODE128 and EAN128 barcodes.

You can store into permanent memory up to 10 data strings for fixed barcodes (max. length 255 char.).

Syntax is:

?55& F , N ; data

parameters mean:

F	Permanent memory index of string data. Correct values are in the range 0 ... 9
,	Comma - separator character
N	Length of data string. Correct values are in the range 1 ... 255
;	Semicolon - separator character
data	Data string for barcode: ASCII characters with code in the range 0 ... 127

WARNING:

Command ?55& stores data in the same memory area used by commands ?72&, ?73&, ?74& for fixed data; it's not possible to use all these commands in the same layout formatting program because the memory would be corrupted.

RECALLING OF STORED DATA TO COMPOSE A CODE128 OR EAN128 FIXED BARCODE

With this command it's possible to compose a fixed barcode reading the data from previously programmed permanent memory. The barcode created this way will be a fixed one.

Syntax is:

?56& D1, X , Y , C , H , F

parameters mean:

D	Barcode printing direction
1	Character '1' (One); specific for barcodes
,	Comma - separator character
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
C	Type of barcode to use
H	Height, in dot, of barcode
F	Index of stored data string to recall. Correct values are in the range 0 ... 9

Example: ?56&31, 150, 35, 15, 80, 7

This way you compose a barcode with printing direction=3, co-ordinates X=150 and Y=35, height = 80 dot; barcode is an EAN128 and its data are taken from field #7 of database previously programmed with command ?55&...

RECALLING OF STORED DATA TO COMPOSE A CODE128 OR EAN128 VARIABLE BARCODE

With this command it's possible to compose a variable barcode reading the data from previously programmed permanent memory.

Syntax is:

?31& F

parameter means:

F Index of stored data string to recall. Correct values are in the range 0 ... 9

BIDIMENSIONAL (2D) CODES

PDF417 CODE

With this command you can print a bi-dimensional code PDF417.

Syntax is:

?92&X,Y,Mb,Mh,SecLev,Lin,Col,Trunc,Dim;DATA

and parameters mean:

X	X co-ordinate expressed in dot
,	Comma: separator character
Y	Y co-ordinate expressed in dot
Mb	Magnification, on X direction, of unitary element
Mh	Magnification, on Y direction, of unitary element
SecLev	Security level of code. It shows the redundancy of printed data
Lin	N° of lines to use
Col	N° of columns to use
Trunc	1 = Truncated Code; 0 = Standard Code
Dim	N° of byte (characters) to print
;	Semicolon: separator character
DATA	Bytes to print in PDF417 format

Suggestion

To find the correct proportions and dimensions of code, try next parametrs:

Mb = Mh = 3, SecLev = 2, Lin = Col = 0, Trunc = 0.

If you want to use ZZ lines, set Lin = ZZ and Col = 0

If you want to use WW columns, set Lin = 0 and Col = WW

Example: ?92&250,15,3,3,4,0,10,0,15;123456789012345

DATAMATRIX CODE

With this command you can print a bi-dimensional code Datamatrix.
Syntax is:

?93&X,Y,M,Lin,Col,Dim;DATA

and parameters mean:

X	X co-ordinate expressed in dot
,	Comma: separator character
Y	Y co-ordinate expressed in dot
M	Magnification of unitary element
Lin	N° of lines to use
Col	N° of columns to use
Dim	N° of byte (characters) to print
;	Semicolon: separator character
DATA	Bytes to print in Datamatrix format

Suggestion

To find the correct proportions and dimensions of code, try next parametrs:

M = 3, Lin = Col = 0, Trunc = 0.

If you want to use ZZ lines, set Lin = ZZ and Col = 0

If you want to use WW columns, set Lin = 0 and Col = WW

Example: ?93&250,10,8,0,0,15;123456789012345

GS1 DATABAR BARCODES

With next command you can print a barcode field adherent to GS1 specifications

Syntax is:

?G2& D , X , Y , T , E , S , R , DATA|COMPOSITE

and parameters mean:

D	Barcode printing direction	
,	Comma - separator character	
;	Semicolon – separator character between parameters and datas	
X	Co-ordinate X, in dot, of field origin	
Y	Co-ordinate Y, in dot, of field origin	
T	Barcode type, valid parameters are:	0...6
E	Barcode expansion	
S	Number of segments for linear element, valid parameters are:	0...22 otherwise 0
R	Clear text YES/NO and relative expansion	
|	separator character between linear part and composite	

Legit barcode types::

- 0 *GS1 Databar Omnidirectional*
- 1 *GS1 Databar Truncated*
- 2 *GS1 Databar Stacked*
- 3 *GS1 Databar Stacked Omnidirectional*
- 4 *GS1 Databar Limited*
- 5 *GS1 Databar Expanded*
- 6 *GS1 Databar Expanded Stacked*

WARNING: The parameter S is ignored for every type of barcode except *Databar Expanded Stacked* code and, by GS1 technical papers, it changes by 2 up to 22 (included) without composite code, otherwise the minimum value will rise to 4

WARNING: For T by 0 up to 4 (included) the maximal number of data character allowed is 13 without the application identifier 01 (because it's implied in the barcode, it must not be sent) and relative check digit (it will be added by the printer)
For T by 5 to 6 each AI that needs its own check digit, based on GS1 specification, the check digit must be calculated and sent to the printer.

FNC1: To include a FNC1 (read as GS by scanners) you must use # character

Samples:

GS1 Databar Omnidirectional with 13 digits, check digit calculated by printer
?G2&2,200,100,0,2,0,2;9988776655443

GS1 Databar Expanded Stacked, if AI needs check digit it must be calculated by user
?G2&1,200,100,6,2,0,2;(01)99887766554435

GS1 Databar Expanded Stacked, FNC1 included after data of AI (10)
?G2&1,200,100,6,2,0,2;(01)99887766554435(10)995# (17)100101

GS1 DATABAR BARCODE - VARIABLE

With next command you can print a variable barcode field adherent to GS1 specifications

Syntax is:

?G3& D , X , Y , T , E , S , R

and parameters mean:

D	Barcode printing direction	
,	Comma - separator character	
;	Semicolon – separator character between parameters and datas	
X	Co-ordinate X, in dot, of field origin	
Y	Co-ordinate Y, in dot, of field origin	
T	Barcode type, valid parameters are:	0...6
E	Barcode expansion	
S	Number of segments for linear element, valid parameters are:	0...22 otherwise 0
R	Clear text YES/NO and relative expansion	
|	separator character between linear part and composite	

Legit barcode types::

- 0 *GS1 Databar Omnidirectional*
- 1 *GS1 Databar Truncated*
- 2 *GS1 Databar Stacked*
- 3 *GS1 Databar Stacked Omnidirectional*
- 4 *GS1 Databar Limited*
- 5 *GS1 Databar Expanded*
- 6 *GS1 Databar Expanded Stacked*

WARNING: The parameter S is ignored for every type of barcode except *Databar Expanded Stacked* code and, by GS1 technical papers, it changes by 2 up to 22 (included) without composite code, otherwise the minimum value will rise to 4

WARNING: : For T by 0 up to 4 (included) the maximal number of data character allowed is 13 without the application identifier 01 (because it's implied in the barcode, it must not be sent) and relative check digit (it will be added by the printer)
For T by 5 to 6 each AI that needs its own check digit, based on GS1 specification, the check digit must be calculated and sent to the printer.

FNC1: To include a FNC1 (read as GS by scanners) you must use # character

Samples:

GS1 Databar Omnidirectional with 13 digits, check digit calculated by printer

?04&A

?G3&A,0,1,200,100,0,2,0,2

?05&A

?25&9988776655443

GS1 Databar Expanded Stacked, if AI needs check digit it must be calculated by user

?04&A

?G3&A,0,1,200,100,6,2,0,1

?05&A

?25&(01)99887766554435

GS1 Databar Expanded Stacked, FNC1 included after data of AI (10)

?04&A

?G3&A,0,1,200,100,6,2,0,1

?05&A

?25&(01)99887766554435(10)995#(17)100101

“COMBI” text and code

“COMBI” TEXT

With next command you can prepare a “combi” text field. A “combi” text field is a text by more than 1 data slice. Each data slice source may be freely specified by the user. The maximum number of slices available relies on their type because different data slice length types may have different length in bytes.

Each combi text may use 22 Memory Units (M.U.) to store all slices it is made by. Memory size for each specific slice is summarized at paragraph “Part list for a combi field”.

Syntax is:

?C0& N , I , D , X , Y , G , EE , Blocks

and parameters mean:

N	Uppercase letter showing the layout you are programming
,	Comma - separator character
I	Field index into layout; correct values are: 0...77
D	Text printing direction
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
G	Font index
EE	Two numeric digit for magnification of base and height of character
Blocks	Text part list. See details at paragraph “Part list for a combi field”

“COMBI” BARCODE

With next command you can prepare a “combi” barcode field. A “combi” barcode field is a barcode made by more than 1 data slice. Each data slice source may be freely specified by the user. The maximum number of slices available relies on their type because different data slice length types may have different length in bytes.

Each combi barcode may use 16 Memory Units (M.U.) to store all slices it is made by. Memory size for each specific slice is summarized at paragraph “Part list for a combi field”.

Syntax is:

?C1& N , I , D , X , Y , C , H , Blocks

and parameters mean:

N	Uppercase letter showing the layout you are programming
,	Comma - separator character
I	Field index into layout; correct values are: 0...77
D	Barcode printing direction
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
C	Type of barcode to compose
H	Height, in dot, of barcode
Blocks	Barcode part list. See details at paragraph “Part list for a combi field”

“COMBI” UCC/EAN WITH AI BARCODE

With next command you can prepare a “combi” barcode field. A “combi” barcode field is a barcode made by more than 1 data slice. Each data slice source may be freely specified by the user. The maximum number of slices available relies on their type because different data slice length types may have different length in bytes.

Each combi barcode may use 16 Memory Units (M.U.) to store all slices it is made by. Memory size for each specific slice is summarized at paragraph “Part list for a combi field”.

Syntax is:

?C2& N , I , D , X , Y , C , H , Blocks

and parameters mean:

N	Uppercase letter showing the layout you are programming
,	Comma - separator character
I	Field index into layout; correct values are: 0...77
D	Barcode printing direction
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
C	Type of barcode to compose
H	Height, in dot, of barcode
Blocks AI	Barcode part list (Application Identifier). See details at paragraph “Part list for a combi field”

Example:

CODE UCC/EAN MADE BY AI 02, 10 AND 37 WITH FIXED DATA

?C2&A,2,1,10,200,15,170,02,100,0061414100041,10,100,000214,37,100,1234XAB

“COMBI” DATAMATRIX CODE

With next command you can prepare a “combi” barcode field. A “combi” barcode field is a barcode made by more than 1 data slice. Each data slice source may be freely specified by the user. The maximum number of slices available relies on their type because different data slice length types may have different length in bytes.

Each combi barcode may use 16 Memory Units (M.U.) to store all slices it is made by. Memory size for each specific slice is summarized at paragraph “Part list for a combi field”.

Syntax is:

?C3& N , I , D , X , Y , C , R , Blocks

and parameters mean:

N	Uppercase letter showing the layout you are programming
,	Comma - separator character
I	Field index into layout; correct values are: 0...77
E	Barcode expansion
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
C	Number of columns for Datamatrix (for automatic calculation is recommended to leave 0)
R	Number of rows for Datamatrix (for automatic calculation is recommended to leave 0)
Blocks	Barcode part list. See details at paragraph “Part list for a combi field”

PART LIST FOR A COMBI FIELD

ALREADY RECEIVED VARIABLE FIELD (MEMORY SIZE = 3 M. U.)

It's possible to set already-received variable data as a slice of a combi field. In this case the user must specify variable field index, data start position and data stop position.

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: Index , Start , Stop with:

Index = Index of variable field. Valori: 0...77

Start = Starting byte of variable field. Valori: 0...49

Stop = Ending byte of variable field. Valori: 0...49

EXAMPLE: BARCODE MADE BY BYTE 0...6 OF VARIABLE FIELD WHOSE INDEX IS 0 AND BY BYTE 0...6 OF VARIABLE FIELD WHOSE INDEX IS 1: ?C1&A,12,1,39,199,14,135,0,0,6,1,0,6

FIXED TEXT – STRIGHT INPUT (MEMORY SIZE = 2 M. U.)

It's possible to stright input into commands ?C0&... or ?C1&... a text as a slice of a combi field

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 100 , Text with:

100 = Fixed value, to state fixed text – stright input

Text = Data to write: max 50 character

EXAMPLE: TEXT MADE BY A "FIXED SLICE" + " STRIGHT INPUT": ?C0&A,5,1,50,120,2,11,100, FIXED SLICE,100, STRIGHT INPUT

FIXED TEXT – FROM MEMORY (MEMORY SIZE = 2 M. U.)

It's possible to set into commands ?C0&... or ?C1&... a text already stored in printer memory as a slice of a combi field.

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 101 , Index with:

101 = Fixed value, to state fixed text – from memory

Index = Text index position in printer memory. Value: 0...49

EXAMPLE: COMBI TEXT MADE BY TWO TEXT FIELD ALREADY IN PRINTER MEMORY AT INDEXES 12 AND 3: ?C0&A,5,1,50,120,2,11,101,12,101,3

DD/MM/YYYY (MEMORY SIZE = 1 M. U.)

With this choice Day/Month/Year (4 digits) information is set in combi field. Real data are taken from internal printer RTC (Real Time Clock)

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 110 where 110 = Fixed value, to state DD/MM/YYYY field

EXAMPLE: BARCODE MADE BY A DD/MM/YYYY DATE: ?C1&A,5,1,50,120,14,90,110

DD/MM/YY (MEMORY SIZE = 1 M. U.)

With this choice Day/Month/Year (2 digits) information is set in combi field. Real data are taken from internal printer RTC (Real Time Clock)

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 111 where 111 = Fixed value, to state DD/MM/YY field

EXAMPLE: BARCODE MADE BY A DD/MM/YY DATE: ?C1&A,5,1,50,120,14,90,111

MM/YYYY (MEMORY SIZE = 1 M. U.)

With this choice Month/Year (4 digits) information is set in combi field. Real data are taken from internal printer RTC (Real Time Clock)

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 112 where 112 = Fixed value, to state MM/YYYY field

EXAMPLE: BARCODE MADE BY A MM/YYYY DATE: ?C1&A,5,1,50,120,14,90,112

MM/YY (MEMORY SIZE = 1 M. U.)

With this choice Month/Year (2 digits) information is set in combi field. Real data are taken from internal printer RTC (Real Time Clock)

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 113 where 113 = Fixed value, to state MM/YY field

EXAMPLE: BARCODE MADE BY A MM/YY DATE: ?C1&A,5,1,50,120,14,90,113

YYYY (MEMORY SIZE = 1 M. U.)

With this choice Year (4 digits) information is set in combi field. Real data are taken from internal printer RTC (Real Time Clock)

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 114 where 114 = Fixed value, to state YYYY field

EXAMPLE: BARCODE MADE BY A YYYY DATE: ?C1&A,5,1,50,120,14,90,114

YY (MEMORY SIZE = 1 M. U.)

With this choice Year (2 digits) information is set in combi field. Real data are taken from internal printer RTC (Real Time Clock)

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 115 where 115 = Fixed value, to state YY field

EXAMPLE: BARCODE MADE BY A YY DATE: ?C1&A,5,1,50,120,14,90,115

DDD : DAY 1 ... 365 (MEMORY SIZE = 1 M. U.)

With this choice Day (1...365) of Year information is set in combi field. Real data are taken from internal printer RTC (Real Time Clock)

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 116 where 116 = Fixed value, to state DDD field

EXAMPLE: BARCODE MADE BY A DDD INFO: ?C1&A,5,1,50,120,14,90,116

WW : WEEK 1 ... 52 (MEMORY SIZE = 1 M. U.)

With this choice Week (1...52) of Year information is set in combi field. Real data are taken from internal printer RTC (Real Time Clock)

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 117 where 117 = Fixed value, to state WW field

EXAMPLE: BARCODE MADE BY A WW INFO: ?C1&A,5,1,50,120,14,90,117

DDD/YYYY (MEMORY SIZE = 1 M. U.)

With this choice Day (1...365) / Year (4 digits) information is set in combi field. Real data are taken from internal printer RTC (Real Time Clock)

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 118 where 118 = Fixed value, to state DDD/YYYY field

EXAMPLE: BARCODE MADE BY A DDD/YYYY INFO: ?C1&A,5,1,50,120,14,90,118

WW/YYYY (MEMORY SIZE = 1 M. U.)

With this choice Week (1...52) / Year (4 digits) information is set in combi field. Real data are taken from internal printer RTC (Real Time Clock)

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 119 where 119 = Fixed value, to state WW/YYYY field

EXAMPLE: BARCODE MADE BY A WW/YYYY INFO: ?C1&A,5,1,50,120,14,90,119

HH:MM:SS (MEMORY SIZE = 1 M. U.)

With this choice hh:mm:ss information is set in combi field. Real data are taken from internal printer RTC (Real Time Clock)

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 130 where 130 = Fixed value, to state hh:mm:ss field

EXAMPLE: BARCODE MADE BY A HH:MM:SS INFO: ?C1&A,5,1,50,120,14,90,130

HH:MM (MEMORY SIZE = 1 M. U.)

With this choice hh:mm information is set in combi field. Real data are taken from internal printer RTC (Real Time Clock)

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 131 where 131 = Fixed value, to state hh:mm field

EXAMPLE: BARCODE MADE BY A HH:MM INFO: ?C1&A,5,1,50,120,14,90,131

HH (MEMORY SIZE = 1 M. U.)

With this choice hh information is set in combi field. Real data are taken from internal printer RTC (Real Time Clock)

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 132 where 132 = Fixed value, to state hh field

EXAMPLE: BARCODE MADE BY A HH INFO: ?C1&A,5,1,50,120,14,90,132

COUNTER (MEMORY SIZE = 1 M. U.)

With this choice a counting value is set in combi field. Counting value is taken from index-selected counter.

Counter specific parameters are independent from combi field and must be set by counter commands (?18&... , ?82&... , ecc...)

Blocks parameter for commands ?C0&... or ?C1&... has this syntax:

Blocks: 140 , Index with

140 = Fixed value, to state counter field

Index= Counter index: 0 , ... , 3

EXAMPLE: COMBI TEXT MADE BY COUNTER WITH INDEX 2: ?C0&A,5,1,50,120,2,11,140,2

LINES

HORIZONTAL OR VERTICAL LINES - IMMEDIATE DRAWING

Syntax is:

?15& X , Y , L , D , T

parameters mean:

- X** Co-ordinate X, in dot, of line origin
- ,** comma - separator character
- Y** Co-ordinate Y, in dot, of line origin
- L** Length of line in dots
- D** Line Direction: values can be
 - 0** = Y increasing
 - 1** = Y decreasing
 - 2** = X increasing
 - 3** = X decreasing
- T** Line thickness in dots; correct values are in the range 1 ... 16

Example: ?15&10,20,50,2,4

This example programs a line on the label. Parameters are: co-ordinates X=10 and Y=20, line length = 50 dots, line direction = 2 and thickness = 4 dot

DIAGONAL LINES - IMMEDIATE DRAWING

Syntax is:

?58& X1 , Y1 , X2 , Y2 , T

parameters mean:

X1	Starting X co-ordinate
Y1	Starting Y co-ordinate
X2	Ending X co-ordinate
Y2	Ending Y co-ordinate
T	Line thickness in dots; correct values are in the range 1 ... 99

If X1 = X2 you'll draw a vertical line

If Y1 = Y2 you'll draw a horizontal line

Example:

?58&100,25,580,230,5

This command will draw a diagonal line with thickness = 5 dots starting from point (100,25) to point (580,230)

HORIZONTAL OR VERTICAL LINES STORING

You can link some line into a layout, so they will be composed automatically when layout is activated.

Syntax is:

?34& N , I , X , Y , L , D , S

parameters mean:

N	Uppercase letter showing the layout you are programming
,	Comma - separator character
I	Field index into layout; correct values are: 0..99
X	Co-ordinate X, in dot, of line origin
Y	Co-ordinate Y, in dot, of line origin
L	Length of line in dots
D	Line Direction: values can be 0 = Y increasing 1 = Y decreasing 2 = X increasing 3 = X decreasing
T	Line thickness in dots; correct values are in the range 1 ... 16

Example: ?34&G,4,10,20,50,2,4

This example programs field #4 of layout G as line; co-ordinates are X=10 and Y=20, length is 50 dot, print direction is 2 and line thickness is 4 dot

RECTANGLES

RECTANGLES - IMMEDIATE DRAWING

With this command you can compose a rectangle ready to be printed on label

Syntax is:

?46& X , Y , H , L , T

parameters mean:

X	Co-ordinate X, in dot, of rectangle origin
,	Comma - separator character
Y	Co-ordinate Y, in dot, of rectangle origin
H	Height, in dots, in Y direction
L	Base Length, in dots, in X direction
T	Line thickness in dots; correct values are in the range 1 ... 16

Example: ?46&250,40,50,200,4

This example programs a rectangle with co-ordinates X = 250 and Y = 40, height = 50 dots in Y direction, length base = 200 dots in X direction, line thickness = 4 dots.

PERMANENT MEMORY RECTANGLES STORING

You can link some rectangle into a layout, so they will be composed automatically when layout is activated.

Syntax is:

?35& N , I , X , Y , H , L , T

parameters mean:

N	Uppercase letter showing the layout you are programming
,	Comma - separator character
I	Field index into layout; correct values are: 0..99
X	Co-ordinate X, in dot, of rectangle origin
Y	Co-ordinate Y, in dot, of rectangle origin
H	Height of rectangle in dot (in Y direction)
L	Length of base of rectangle in dot (in X direction)
T	Line thickness in dots; correct values are in the range 1 ... 16

Example: ?46&B,9,250,40,50,200,4

This example programs the field #9 into layout B as a rectangle with co-ordinates X=250 and Y=40, height = 50 dots in Y direction, length of base = 200 dots in X direction, line thickness = 4 dots.

SHADY and FILLED AREAS

FILLED AREA - IMMEDIATE DRAWING

You can put on label a zone completely filled in a particular way.

Syntax is:

?22& X , Y , L , H , T

parameters mean:

X	Co-ordinate X, in dot, of shady area origin
,	Comma - separator character
Y	Co-ordinate Y, in dot, of shady area origin
L	Length of shady area base (in X direction) in dots
H	Length of shady area height (in Y direction) in dots
T	Type of area: 0 = white 1 = black 2 = reverse 3 = black shade 4 = white shade

Example: ?22&50,60,20,30,1

This example programs a completely black area on the label; co-ordinates are X=50, Y=60, base is 20 dots long and height is 30 dots long

SHADY AND FILLED AREAS STORING IN PERMANENT MEMORY

You can link some filled area into a layout, so it will be composed automatically when layout is activated.

Syntax is:

?45& N , I , X , Y , L , H , T

e i parametri hanno il seguente significato:

N	Uppercase letter showing the layout you are programming
,	Comma - separator character
I	Field index into layout; correct values are: 0..99
X	Co-ordinate X, in dot, of area origin
Y	Co-ordinate Y, in dot, of area origin
L	Length of shady area base (in X direction) in dots
H	Length of shady area height (in Y direction) in dots
T	Type of area: 0 = white 1 = black 2 = reverse 3 = black shade 4 = white shade

Example: **?45&G,4,50,60,20,30,1**

This example programs the field #4 into layout G as black area on label; co-ordinates are X=50, Y=60, base is 20 dots long and height is 30 dots long

GRAPHICS

italora printers make you able to personalize with company logos and graphic images the label you have to print.

You can choose between immediate drawing or storing of graphic data.

IMAGES - IMMEDIATE DRAWING

With this commands you can transmit and print an image object to an **italora** printer.

Graphic images are composed in an immediate mode by ?17&... commands that is divided into three parts.

GRAPHIC MODE START

This must be the first graphic command.

Syntax is:

?17& X , Y ; data

parameters mean:

X Co-ordinate X, in dot, of image origin
, Comma - separator character
Y Co-ordinate Y, in dot, of image origin
; Semicolon - separator character
data ASCII characters into the first line of image

data string represents the first dot line of image. It is composed by groups of four dots, transformed as indicated into the below table.

ASCII CHARACTER	GROUP of FOUR DOTS	ASCII CHARACTER	GROUP of FOUR DOTS
'0'	0000	'8'	1000
'1'	0001	'9'	1001
'2'	0010	'A'	1010
'3'	0011	'B'	1011
'4'	0100	'C'	1100
'5'	0101	'D'	1101
'6'	0110	'E'	1110
'7'	0111	'F'	1111

“GRAPHIC DOTs” Table

NOTE: In above table you have: **0 = WHITE dot,** **1 = BLACK dot**

GRAPHIC DATA

When you have transmitted the first switch of command ?17&..., in which you have determined the coordinates of image and the first line of dots, you have to transmit the main body of command ?17&... For each line of dots (after the first one) into graphic image you have to transmit one command ?17&.

Syntax is:

?17&; data

parameter means:

; Semicolon – separator character
data ASCII characters for coded line of image

data string must be composed using the table “Graphic Dots”.

GRAPHIC MODE END

When all lines of image have been transmitted to printer, you have to close the command ?17&... with a particular switch.

Syntax is:

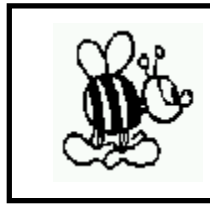
?17& .

parameter means:

. full stop – terminator character

EXAMPLE TO PRINT AN IMAGE

This example prints the next image.



Commands to use:

```
?17&100,10;0001F8          /* First switch of command... */
?17&;0003B8
?17&;03E70C
?17&;07F60C
?17&;063E0C1C
?17&;041C0C1C
?17&;040C0FDC
?17&;040C1BDC
?17&;060C3BD
?17&;070E73F
?17&;0387E0B
?17&;01FFE0FE          /* ...Main Body... */
?17&;00FFF0FF
?17&;00FF78C98
?17&;01FF7D89C8
?17&;01FFBF8DDC
?17&;03F7BF8DFC
?17&;03F7BF86E4
?17&;037FFF87FC
?17&;037BDFC3FC
?17&;037BDFC06
?17&;01FBDFE06
?17&;01FBDF7FE
?17&;00FBDF3F8
?17&;00FBFE
?17&;007FFF
?17&;3E7FF78
?17&;7F78FFE
?17&;63FFFFF
?17&;40FFFE18
?17&;407BFC18
?17&;6007E018
?17&;700E4018
?17&;38FCF038
?17&;1FFFFFFF
?17&;0007078
?17&.          /* ...Close switch of command */
```

STORING IMAGES IN PERMANENT MEMORY

You can store graphic images into permanent memory and link them to a layout, so they will be composed automatically when layout is activated.

If you recall a previously stored image instead transmitting it you save a lot of time at printing phase. Graphic images are stored with a sequential index that allows you to recall them when you have to print an image.

If you have to store more than one image you have to send them to printer in a sequential list; index of images must start from 0 and increment one by one.

The command to store graphic images is ?37&... and it is composed by next three parts.

GRAPHIC DATA DOWNLOAD START

This is the first switch of command, in fact with it you can specify the index of image you are programming.

Syntax is:

?37& IDX

parameter means:

IDX index of image. Correct values are in the range 0 ... 999

WARNING:

If you have already programmed images with indexes 0, 1, 2, 3, 4, 5 and 6 and you program, in a second time, a new image with index 4, previous images number 5 and 6 will be lost.

GRAPHIC DATA DOWNLOAD

The second part for graphic images storing is the one in which you send the graphic data of image.
Syntax is:

?37&; data

parameter means:

; Semicolon - separator character
data ASCII characters composing graphic image

Data must be composed referring to “Graphic Dots” table.
This command must be repeated for each horizontal line composing image.

GRAPHIC DATA DOWNLOAD END

This is the last part of command ?37& and must be sent after having sent all the lines of image to printer.

Syntax is:

?37&.

parameter means:

- Full stop - terminator character

Example: How to store 3 images

?37&0	Start first image with index 0
?37&;40404	Graphic dots
?37&;.....	Graphic dots
?37&.	Close of first image
?37&1	Start second image with index 1
?37&;.....	Graphic dots
?37&.	Close of second image
?37&2	Start third image with index 2
?37&;.....	Graphic dots
?37&.	Close of third image

Once stored, an image can be recalled in two different ways: immediate one or included to a layout. Let's see each of them in detail.

ENHANCING GRAPHIC IMAGES TRANSMISSION SPEED

You have a way to increase the speed of graphic images transmission. You have to send to printer two commands: the first opens graphic operations, the second closes them.

Syntax is:

?A0&1 It opens graphic operations

?A1&0 It closes graphic operations

Example:

```
...
?A0&1                      Opening graphic operations
?37&0                      First image begins here
...
?37&.                      First image ends here
?37&1                      Second image begins here
...
?37&.                      Second image ends here
...
?37&.                      Last image ends here
?A1&0                      Closing graphic operations
```

IMAGES FROM PERMANENT MEMORY - IMMEDIATE DRAWING

After having stored images into permanent memory it is possible to recall them by their indexes and to put them at the desired co-ordinates and to print them in immediate mode.
You can program index of image and co-ordinates of image origin into label.

Syntax is:

?38& IDX , X , Y

and parameters mean:

IDX index of image. Correct values are in the range 0 ... 999
, comma - separator character
X co-ordinate X, in dot, of right-bottom corner of image
Y co-ordinate Y, in dot, of right-bottom corner of image

Recalling an image with index not yet stored will have no effect for print

Example: ?38& 5,120,45

This example recalls image 5 and place it onto label starting at co-ordinates X=120 and Y=45

INCLUDING AN IMAGE INTO A LAYOUT

The second way to use stored images is to link them to a layout.
In this way included images are composed each time the layout is activated.

Syntax is:

?36& N , I , X , Y , IDX

And parameters mean:

N	Uppercase letter showing the layout you are programming
,	Comma - separator character
I	Field index into layout; correct values are: 0..99
X	co-ordinate X, in dot, of right-bottom corner of image
Y	co-ordinate Y, in dot, of right-bottom corner of image
IDX	index of image to compose. Correct values are in the range 0 ... 999

Recalling an image with index not yet stored will have no effect for print

Example: ?36& E, 2,120,45,8

This example programs field number 2 into layout E with image number 8; it will be positioned onto label at co-ordinates X=120 and Y=45

OTHER COMMANDS RELATED TO LAYOUTS

LAYOUT ERASING

This command must be used before programming just any one layout.

Normally this command is sent first of all the other programming a layout; first you erase the existing layout, then you program the new one.

Syntax is:

?04&N

and parameter means:

N Uppercase letter showing the layout you are programming

Example: ?04& E

This example erases all data of layout E from permanent memory

LAYOUT ACTIVATING

With this command you can recall and compose a yet programmed layout. All fields related to it are composed into label.

Before sending variable data to printer it's necessary to activate the proper layout that will have to receive them.

Once activated, the layout stays into print buffer ready to be printed until you activate another layout different from the previous one.

Syntax is:

?05&N

and parameter means:

N Uppercase letter showing the layout you want to activate

Example: ?05& A

This example activates layout A

STORING IN LAYOUT OF LABEL PRINTING PARAMETERS

To complete the manage of a layout it's necessary to program some typical parameter of printer. Command ?79&... makes you able to program the following parameters:

- Printing speed
- Software printhead power
- Gap of printing label position
- Feed to push paper forward before stopping (for continuous mode only)
- Set/Reset of counters and internal clock/date (RTC)
- Transmission of character Form Feed (12 Decimal) at the end of print
- Print button ON/OFF
- Label Taken Sensor ON/OFF
- Cutter ON/OFF
- Ending print long signal ON/OFF
- Text alignment selection
- Filter of not numeric characters for numeric barcode (i.e. EAN 13)
- Printhead power level decrease
- Software Control of printhead power
- Barcode readable characters ON/OFF
- Barcode unit element (module) width
- Barcode Wide parameter
- Barcode Narrow parameter

Command ?79&... is made by three switches; depending on which function you have to program you can select only the appropriate switch.

Parameters above are included into layout you are programming; when you will activate that layout all included parameters will be activate too.

Let's take a look in detail of three parts composing command ?79&...

?79&....: FIRST SWITCH

Syntax is:

?79& N , I , 0 , PS, PWR, GAP, FEED, BB0, BB1

And parameters mean:

N	Uppercase letter showing the layout you are programming		
,	Comma - separator character		
I	Field index into layout; correct values are: 0..99		
0	Zero: fixed values to program first switch		
PS	Printing speed: for correct values see table "Head Resolution and Print Width"		
PWR	Printhead power (in percent). Correct values are in the range 0 ... 100.		
GAP	Gap value with positive (+) or negative (-) sign. Correct values are in the range -999 ... +999 and are expressed in dot		
FEED	Feed to push paper forward before stopping. Correct values are in the range 0 ... 999		
BB0	8 digits ABCDEFGH ; each digit can be only '0' or '1'		
A	counter n° 0	1=ON	0=OFF
B	counter n° 1	1=ON	0=OFF
C	RTC n° 0 (date or hour)	1=ON	0=OFF
D	RTC n° 1 (date or hour)	1=ON	0=OFF
E	Form Feed chr. at the end of print	1=ON	0=OFF
F	Print Button disable	1=Disabled	0=Enabled
G	Label Taken Sensor	1=ON	0=OFF
H	Cutter	1=ON	0=OFF
BB1	8 digits IJKLMNOP ; each digit can be only '0' or '1'		
I	Ending print long signal	1=ON	0=OFF
J	Unused		
K	Unused		
L	Unused		
M	Text alignment	1=Special	0=Standard
N	Characters filter for numeric barcodes	1=ON	0=OFF
O	Printhead power level decrease	1=ON	0=OFF
P	Software control of printhead power	1=ON	0=OFF

Example: ?79& F, 4, 0, 120, 35, +85, 0, 00000000,00000001

This example programs field n° 4 of layout F. All following settings will be automatically activated when layout is recalled: printing speed = 120 mm/sec, printhead power = 35%, gap = 85 dot out in label mode, no feed in continuous mode, no counters, no hour / date fields, Form Feed character transmission at the end of print disabled, printing button enabled, label taken sensor and cutter disabled, normal optoisolated ending print signal, standard texts alignment, characters filter for numeric barcodes disabled, printhead power level normal, software control of printhead power enabled.

?79&...: SECOND SWITCH

The second switch of command ?79&... is dedicated to barcode parameters.

Syntax is:

?79& N , I , 1 , Rch, Exp, W, N

And parameters mean:

N	Uppercase letter showing the layout you are programming
,	Comma - separator character
I	Field index into layout; correct values are: 0..99
1	One: fixed values to program Second switch
Rch	Readable characters under barcode: '0' = OFF, '1' = ON
Exp	Expansion, code unit element. Correct values are in the range 1 ... 9
W	Wide Parameter of code. Correct values are in the range 1 ... 16
N	Narrow Parameter of code. Correct values are in the range 1 ... 16

Example: ?79& A, 9, 1, 0, 3, 4, 2

This example programs the field n° 9 into layout A. Following settings will be automatically activated when layout is recalled: readable characters under barcode disabled, expansion = 3 of barcode, Wide parameter = 4, Narrow parameter = 2

?79&...: THIRD SWITCH

The third switch of ?79&... command id is dedicated to counters. For more detailed informations about counters see chapter “Counters and Clock”.

Syntax is:

?79& N , I , 2 , BB2 , BB3

And parameters mean:

N	Uppercase letter showing the layout you are programming		
,	Comma - separator character		
I	Field index into layout; correct values are: 0..99		
2	Two: fixed values to program Third switch		
BB2	8 digits xxxxABCD ; each digit can be only ‘0’ or ‘1’		
	x Unused		
	A Calculation Base n° 3	‘0’= OFF	‘1’ = ON
	B Calculation Base n° 2	‘0’= OFF	‘1’ = ON
	C Calculation Base n° 1	‘0’= OFF	‘1’ = ON
	D Calculation Base n° 0	‘0’= OFF	‘1’ = ON
BB3	8 digits xxEFGHIL ; each digit can be only ‘0’ or ‘1’		
	x Inutilizzato		
	E Printing Image n° 5	‘0’= OFF	‘1’ = ON
	F Printing Image n° 4	‘0’= OFF	‘1’ = ON
	G Printing Image n° 3	‘0’= OFF	‘1’ = ON
	H Printing Image n° 2	‘0’= OFF	‘1’ = ON
	I Printing Image n° 1	‘0’= OFF	‘1’ = ON
	L Printing Image n° 0	‘0’= OFF	‘1’ = ON

Example: ?79& B, 5, 2, 00000001, 00000011

This example programs field n° 5 into layout B. Following settings will be automatically activated when layout is recalled: calculation base n° 0 is ON, printing image n° 0 and 1 will be ON. Specific commands to program Bases and Images of counters are in the chapter “Counters and Clock”.

VARIABLE FIELDS PROTECTION LEVEL

A lot of variable fields (up to 100) can be stored into a layout. Some of them can be transformed into fixed fields. That is they are no more changed by new incoming data.

There are 10 levels of protection (from 0 to 9); at power on the active level is 0, that means no variable field is protected.

Each time you increase protection level, every variable field already programmed becomes a fixed field and printer doesn't modify them anymore. On the contrary, each time you decrease the level you will be able to modify data previous protected.

Syntax is:

?21& L

and parameter means:

L Level you want to activate. Correct values are in the range 0 ... 9

Example:

Suppose you have already programmed layout E with 5 variable fields. So you have:

?05&E	Layout E activation
?25&11111	1 st variable field
?25&22222	2 nd variable field
?21&1	I activate first level of protection: previous two variable fields become fixed
?25&33333	3 th variable field
?25&44444	4 th variable field
?25&55555	5 th variable field.

At this point the first label is printed with data "11111" , "22222" , "33333" , "44444" , "55555"

?25&AAAA	3 th variable field
?25&BBBB	4 th variable field
?25&CCCC	5 th variable field.

At this point the second label is printed with data "11111" , "22222" , "AAAA" , "BBBB" , "CCCC"

OTHER COMMANDS FOR GRAPHIC COMPOSITION

Below there is some other command useful to compose a label.

PRINT BUFFER CLEARING

This command erases all print buffer memory.

Normally this command is the first into the list of programming commands.

Syntax is:

?00&

As you can see the command is without parameters.

LEFT ALIGNEMENT

This command selects the **texts** alignment mode; for details see section “Text alignment setup”.

This command must be sent to printer before all other commands for texts programming. Once received, the command will operate on all texts contained into label: that means it's not possible to have all two alignments contemporary present into one only label.

At power on the printer works in standard alignment; once programmed, the left alignment stays active till power off or till some priority reset command (such as “!1” or “!2”) comes into printer.

Syntax is:

?81& M

and parameter **M** means:

- 0** standard alignment mode
- 1** left alignment mode

Example: ?81& 1

This command programs the left alignment mode for texts

HALF RESOLUTION

With this command you can print using a halved resolution. All objects into label will be doubled in both height and and width.

If your printer has a 8 dots/mm resolution printhead and you use this command, printer will simulate a 4 dots/mm resolution.

Settings done with this command will be kept into printer permanent memory.

Syntax is:

?12& R

and parameter **R** can be:

- 1** Full resolution
- 0** Halved resolution

Example: ?12& 1

This command will use

OTHER COMMANDS FOR IMMEDIATE PRINT

Below there is some other command useful to compose and print a label in the immediate mode.

PRINT A SINGLE LABEL

This command causes the print of a label taking data from already composed print buffer.

Syntax is:

?01&

As you can see the command is without parameters.

BATCH PRINT OF LABELS

This command makes you able to print a batch of labels. Data are taken from print buffer. If label contains fields like date/hour or counters, they are upgraded before each print

Syntax is:

?14& N

and parameter means:

N Number of labels to be printed. Correct values are in the range 1 ... 9999

WARNING:

After having received this command printer prints all requested labels without stopping. To stop batch print you must push the print button on the frontal panel of printer.

WARNING:

If something wrong happens during a batch print (such as end of paper or end of ink ribbon) you can resume printing by pressing the print button on the frontal panel of printer.

Example: ?14&12

With this example you print 12 labels taking data from already composed print buffer.

WHITE LABEL PRINT

This command causes the emission of a completely white label

Syntax is:

?70&

As you can see the command is without parameters.

LAYOUT PROGRAMMING EXAMPLE

?67&0
?69&0
?07&120
?51&0
?27&
?81&0
?08&0
?63&0
?43&0
?44&1
?60&1
?76&00000000
?68&0
?06&-20
?66&0
?83&0,0,0
?83&0,1,0
?83&0,2,0
?83&0,3,0
?83&1,0,0
?83&1,1,0
?83&1,2,0
?83&1,3,0
?83&1,4,0
?83&1,5,0
?20&2,0
?20&3,0
?12&1
?A0&1
?37&0
?37&;03FFFFFFFFE
?37&;07FFFFFFFFF
?37&;0FFFFFFFFFF
?37&;0FFFFFFFFFF
?37&;0FE07FFFFFFF8
?37&;1FC07FFFFFFF8
?37&;1FC07FFFFFFFC
?37&;3F80FFFFFFFC
?37&;7F80FFFFFFFE
?37&;7F80FFFFFFFE
?37&;7F01FFFFFFFE
?37&;7F01FFFFFFFE
?37&;7F03FFFFFFFF
?37&;7F03FFFFFFFF
?37&;7F07FFFFFFFF
?37&;7F07FFFFFFFF
?37&;7F07FFFFFFFF
?37&;7F07FFFFFFFF
?37&;7F07FFFFFFFF
?37&;7F07FFFFFFFF

?35&C,3,7,0,635,625,4
?45&C,4,49,166,541,441,0
?72&C,5,1,88,523,18,11,0;Handle with care
?35&C,6,88,202,134,112,2
?34&C,7,9,151,620,2,7
?36&C,8,117,235,0
?72&C,9,1,266,213,17,11,1;12 Crystal
?72&C,10,1,266,287,17,11,2;glasses
?79&C,11,1,1,4,2,1
?78&C,12,1,76,363,8,146,3;5499981284
?72&C,13,1,64,30,5,22,4;FINE GLASS
?05&C
?22&0,634,1,1,0

PRINTER SETTING COMMANDS

In this section will be shown some general purpose commands for **italora** printers.

PRINTING SPEED

This command programs the speed of emission of labels.

At power on the speed is 80 mm/sec. When programmed, new value stays active till power off or till a new value.

The lowest speed value, for all printer models, is 35 mm/sec.

The top speed values change depending on printer model; for details see the table "Printing Top Speed"

You can find experimentally the best printing speed depending on materials on which you are printing.

Syntax is:

?07& S

and parameter means:

S Speed of printing (expressed in mm/sec)

Example: ?07&95

This way you program a printing speed at 95 mm/sec

LABEL ALIGNMENT (GAP) ☹

Gap command (valid only in labels mode) is used to vary the standard end of printing label position. Gap value is stored in permanent memory until a new value is sent. Positive gap values make the label stop forward the standard position, negative values backward. When you program a gap value different from the one already present into permanent memory printer will execute a label reallignment putting out few labels.

You can reset gap value to 0 in two ways: initializing printer turning it on with pushed button or sending to printer the command **?06&+0**

Syntax is:

?06& S G

and parameters mean:

- S** sign of gap. Correct signs are:
 - “+” the label will stop **G** dots **forward** the zero position
 - “-” the label will stop **G** dots **backward** the zero position
- G** gap value in dots. Correct values are in the range 0 ... 999

Example: ?06&+28

The label will stop 28 dots forward zero position

DIRECT THERMAL MODE OR THERMAL TRANSFER MODE

This command makes printer to work or in Direct Thermal mode (without ink ribbon) or in Thermal transfer mode (with ink ribbon).

When printer is working in direct thermal mode it doesn't do any check on ink ribbon.

Syntax is:

?A2&6,M

and parameters mean:

- | | |
|----------|-----------------------------------|
| 6 | Six. Fixed value for this switch |
| M | Writing Mode. Correct values are: |
| 0 | Direct Thermal mode |
| 1 | Thermal Transfer mode |

PRINTING POWER REGULATION

The printing power can be regulated in two different ways: via hardware (by operating directly on printer) and via software (by two appropriate software commands).

Models without Display

Manual Regulation via Hardware

The power regulation can be done by a little screwdriver on printer back panel. A clockwise rotation will increase the printhead power.

Programming Regulation via software

There are two different commands that can change the regulation of printhead power. Using them you can relate to each label its correct values depending on materials, print speed and so on.

The first command (?51&...) can select between HIGH or LOW range of power for printhead. HIGH energy levels allows to print hard supports (i.e. Textile nylon and ribbons) to the detriment of printhead life. LOW energy levels (suggested) grant best printhead working conditions. This setting is kept into permanent memory.

Syntax is:

?51& L

and parameter means:

- 0** HIGH printhead power
- 1** LOW printhead power

The second command programs the percent of power to use after having chosen the level by previous command.

This command is equivalent to trimmer on back panel of printer. When printer receives this command the back trimmer is disabled till power off

Syntax is:

?77& P

and parameter means:

- P** percent of power intensity. Correct values are in the range 0 ... 100

Models with Display

Manual Regulation via Hardware

In these models the rear trimmer is replaced by frontal arrows keys. To increase printhead power press the Up arrow, to decrease printhead power press Down arrow

Programming Regulation via software

Software commands to regulate printhead power are the same described for models without display

PRINthead BLACK INTENSITY BOOSTING

Printhead black intensity can be regulated via hardware, by the screw on the back panel, or via software, by two commands ?51&... and ?77&...

You can print using low or high head energies (command ?51&...); for both two work conditions it's possible to program the percentage from 0% up to 100% for black intensity (command ?77&...).

There is a third command that lets you overboost the black intensity percentage.

Syntax is:

?86&xxx

and parameter means:

xxx Black printing percentage. Correct values are: 0 ... 150

When you use this command, printhead works automatically with low energies.

WARNING:

- The higher is the percentage of black intensity, the shorter is life of thermal printhead
- Exceeding the value of 100% can cause breaking down of printing dots

CUTTER DRIVING

This command can activate / deactivate the cutter.

Syntax is:

?43& N

and parameter **N** means:

0 deactivates the cutter

1 activates the cutter

This command stays active until you turn off printer or until you program printer in a different way.
At power on the cutter is NOT active.

Example: ?43&1

You are activating the cutter.

CUTTER PERIOD

When cutter is enabled and you are using batch print you can program cutter to cut every K printed labels.

Syntax is:

?44& K

and parameter means:

K number of printed labels between two cuts. Correct values are in the range 1 ... 999

This command stays active until you turn off printer or until you program cutter in different way. At power on the period between two cuts is 1 (that is you have one cut after each printed label).

Example: ?44&10

This command programs cutter to do a cut after every 10 printed labels.

LABEL MODE, TAG MODE AND CONTINUOUS MODE ☺

italora printer can work using labels, tags or continuous paper.

When printer works in labels or tags mode it will keep the alignment depending on dimension of support and programming of gap value.

When printer works in continuous mode it will put out paper until the last written line has gone out, then it will stop paper; that is in this mode there will be no label alignment.

Below there are commands to program the correct working mode.

Labels, Tags and Continuous mode

For models belonging to this electronic family is necessary to distinguish two different printers classes:

- Printers with display
- Printers without display

Let's see them in detail

Models without Display

For models without display you can program the working mode by a software command.

Syntax is:

?67& N

and parameter **N** means:

- | | |
|----------|---|
| 0 | Labels mode or Tickets with hole mode |
| 1 | Continuous paper mode |
| 2 | Tickets without transparencies and blackmark mode |
| 3 | Alternative mode for tickets with hole |

Before transmitting the above command ?67&... you must pay attention to put the whitest part of label or tag under the label photosensor.

Settings programmed by ?67&... command is kept in permanent memory when you turn printer off too.

Example: ?67&1

This command will program printer to work in continuous paper mode

Models with Display

These printers can be programmed in two different ways:

1. By software, exactly like printers without display
2. By keys on frontal panel (for more details see specific section, paragraph "Main Setup Menu")

If you select Labels or Tags mode by Setup menu, it will be necessary to restart printer with pressed print button, paying attention to put the whitest part of label or tag under the label photosensor.

“REFLECTION” PHOTOSENSOR ☹

With this command you can program the working mode Labels / Tags, choosing at the same time which photosensor you want to use.

With a reflection photosensor printer is able to recognize tags with a black mark on the above side (the opposite one of the printing side); this would be impossible with the fork photosensor.

A fork photosensor is advisable if you use labels put on a siliconic strip support or tags with holes at an equal distance.

Syntax is:

?A6&T

and parameter means:

T	Photosensor selector. Correct values are:
0	Fork photosensor
1	Reflection photosensor

WARNING:

This command always sets up the **Labels / Tags** working mode on printer

USE OF PREPRINTED LABELS ☸

If labels you are using contain some preprinted part (such as company logos, colored parts, and so on...) you have to do a procedure to set the correct print working mode.

This procedure will be different depending on the family of printers.

Let's see them in detail.

Models without Display

For printers without display you can set the preprinted labels working mode by a software command.

Syntax is:

?69& M

and parameter **M** means:

M Working Mode. It can be:

- 1** Use of preprinted paper
- 0** Use white paper (not preprinted)

When printer receives this command it will reinitialize: this phase will stop when you will see the green led light on again.

Command ?69&... is kept in permanent memory.

Models with Display

Printer belonging to this class can be programmed in two different ways:

1. By software
2. By keys on frontal panel (for more details see specific section, paragraph "Main Setup Menu")

PAPER FEED AFTER PRINTING FOR CONTINUOUS MODE ☹

When printer is working in continuous mode the feed of the paper at the end of print normally stops immediately after the last printed line into label. If you want to make the paper move forward more than it normally does you have to program printer with next command.

Syntax is:

?08& L

and parameter means:

L number of lines of putting forward. Correct values are in the range 0 ... 999

Example: ?08&110

This command put forward paper of 110 lines after end of print.

BACKFEED BEFORE PRINTING Ⓜ

When it's necessary to obtain a label peeling, the value of GAP (see paragraph "Gap after printing") must be programmed to 0 (zero); in this way the label edge is positioned few millimeter out of printhead; this space, that is already out of printhead, is not available for printing anymore.

If you want to use also this space you have to use the next command; with it you make label go backward before printing.

Syntax is

?63& L

and parameter **L** means:

L Number of lines to go back. Correct values are in the range 0 ... 100

Example: ?63&80

Label will go back of 80 lines (dot) before print will begin.

BACKFEED FOR BATCH PRINTING

With this command you can optimize backfeed operations when you have to print a queue of batch printings (that is when you are using “?14&...” command).

Normally (that is without using “?A2&14,...” command), when you start a lot of batch printing and backfeed is enabled, backfeed is done for each printed label; the sequence is:

1. label is backfed
2. label is printed
3. label is realigned in the position it had before printing
4. next label is printed (starting from step1)

If you use “?A2&14,...” command, instead, backfeed will be done only before the very first printing; new alignment will be kept till the end of batch printing lot, then label will be aligned with initial position.

1. label is backfed
2. first label is printed
3. next label is printed
4. next label is printed
5. ...
6. last label is printed
5. label is realigned in the position it had before printing

New programmed value will be kept into printer permanent memory.
In this way execution times will be optimized.

Syntax is:

?A2&14,B

and parameters mean:

- 14** Fourteen. Fixed value for this switch
- B** Backfeed optimization. It can be:
- 0** Optimization OFF: backfeed done for each printing label
 - 1** Optimization ON: backfeed done only for the first printing

Example: ?A2&14,1 Optimization ON: backfeed done only for the first printing

LABEL TAKEN PHOTOSENSOR ☹

Italora printers can be supplied with an optional photosensor that controls if last printed label was taken or it wasn't. When photosensor, called "Label taken Photo", is enabled it doesn't permit the print of a new label until the last printed is taken away from printer.

It is necessary to distinguish two different printers classes:

- Printers with display
- Printers without display

Let's see them in detail

Models without Display

Label taken Photosensor is programmed by the next command:

?68& F

and **F** parameter means:

- 0** Label taken Photosensor disabled
- 1** Label taken Photosensor enabled

Example: ?68&1

You are enabling the label taken Photo

Models with Display

These printers can be programmed in two different ways:

3. By software
4. By keys on frontal panel (for more details see see specific section, paragraph "Main Setup Menu")

TRANSMISSION OF SUB CHARACTER ☸

If this feature is enabled, printer transmits one control character at the first status request. This feature makes the printer able to check if there are losses of power.

The control character transmitted has ASCII code = 19HEX = 25 DEC

Syntax is:

?A2&3,T

and parameters mean:

3 Three. Fixed value for this switch

T Setting of transmission of SUB character. Correct values are:

0 Transmission OFF

1 Transmission ON

TRANSMISSION OF ETB CHARACTER WHEN START PRINT SIGNAL IS ENABLED ☹

If this feature is enabled, printer transmits one control character every time external Start Print signal is enabled.

The ETB control character transmitted has ASCII code = 17 HEX = 23 DEC

Syntax is:

?A2&15,T

and parameters mean:

15 Fifteen. Fixed value for this switch

T Setting of transmission of ETB character. Correct values are:

0 Transmission OFF

1 Transmission ON

TRANSMISSION OF CONTROL CHARACTER AT THE END OF PRINT

This command controls the transmission of Device Control 2 character (DC2, ASCII code = 18 Decimal = 12 Hex) on serial line at the end of each print cycle.

Syntax is:

?50& S

and **S** parameter means:

- 0** No character transmitted after printing
- 1** DC2 character transmitted after printing

TRANSMISSION OF CONTROL CHARACTER AT THE END OF LABEL APPLICATION

This command controls the transmission of Device Control 4 character (DC4, ASCII code = 20 Decimal = 14 Hex) on serial line at the end of each application cycle.

Syntax is:

?50& S

and **S** parameter means:

- 2** No character transmitted at the end of label application
- 3** DC4 character transmitted at the end of label application

PRINT BUTTON: ENABLE / DISABLE

This command can program the behaviour of printer print button.

Print button can do several operations; the default is the print of the last composed label.

You can change the function of print button by the next software command:

?60& N

and parameter **N** means:

- 0** Print button Disable
- 1** Print button prints the last composed label and erases the print buffer memory* (default at power on)
- 2** Print button prints the last composed label and doesn't erase the print buffer memory
- 3** Print button prints a whole blank label
- 4** Print button prints label and its variable fields; the next received variable field will compose the first field in the successive label** .
- 5** Undo programming of switch 4

* If print button is programmed with **N=1** and you push it to have the last composed label printed, print buffer memory is erased when printer receives a new software command. To avoid print buffer memory is erased you have to program print button with **N=2**.

** If you are using a layout containing 10 variable fields and you press print button when only 7 have come into printer you will have a print of a partially composed label; the following variable field incoming into printer will compose the 8th field into label and not the 1st one.

RECOGNITION AND PRINTING OF DEGREES CHARACTER ‘°’ FILTER FOR ONLY-NUMERIC BARCODES INFINITE PRINTING CYCLE

‘A’ LAYOUT ENABLED AT POWER-ON

- Recognition and printing of degrees character ‘°’ that otherwise would cause an error
- Filter of not numeric characters from only numeric barcode data
- Possibility to enter in an infinite cycle of printing immediately after power on
- Possibility to activate layout “A” (it needs to be programmed before) immediately after power on

Last two functions, for example, are useful to execute an infinite printing cycle when also label taken photosensor is enabled. In this way it’s possible to program the label layout by a PC at the very first time and then let printer work without PC.

Syntax is:

?76& ABCDEFGH

And parameter means:

A	Unused
B	Unused
C	Unused
D	Unused
E	Recognition of degrees character (‘°’)
F	Filter of not numeric characters from only numeric barcode data (like EAN13)
G	Infinite cycle of printing at power on
H	Automatic activating of layout “A” at power on

Each digit A...H can be only 0 or 1; if you set some digit to 1 you are activating the corresponding function.

E switch let printer recognize the degrees character, (‘°’), that otherwise would cause an error.

F switch let printer eliminate all alphabetic characters from data of only numeric barcodes.

If you have chosen a numeric barcode (i.e. EAN13) and F = 0 (default) when printer receives a string containing NOT numeric data it goes into syntax error condition; on the contrary if F = 1 when printer receives a string containing NOT numeric data it accepts them and it removes all alphabetic digit before composing barcode with remaining digits.

G switch let printer begin an infinite cycle of printing. To use this option you have to program the printer, turn off printer and then turn it on. It is better to use this option with label taken photosensor enable, to avoid uncontrolled emission of labels.

H switch let printer activate layout “A” automatically at power on. Pay attention: to activate a layout means to put on label only the “skeleton” of label itself, without putting into it the variable data.

NOTE: To stop the infinite cycle of printing you have to send to the printer the command “!2” or turn printer on with the print button pressed

Example: ?76&00000011

This command will activate the infinite cycle of printing and layout “A” at power on.

AUTOMATIC PRINTING AFTER THE LAST VARIABLE FIELD ☹

italora printers are projected to print automatically the label as soon as the last variable field in it is composed.

If you don't want so you can inhibit this feature; in this way the printer doesn't print automatically anymore, but it needs a specific print command at the end of command list.

Syntax is:

?A2&2,M

and parameters mean:

2 Two. Fixed value for this switch

M Automatic printing On/Off. Correct values are:

0 printer DOESN'T PRINT automatically

1 printer PRINTS automatically

Command ?A4&M is alternative to ?A2&2,M

Syntax is:

?A4&M

and parameter means:

M Automatic printing On/Off. Correct values are:

0 printer DOESN'T PRINT automatically

1 printer PRINTS automatically

TEMPORARY ACTIVATION OF AN INFINITE PRINTING LOOP

With this command it's possible to enable or disable the infinite printing loop without saving this setting into permanent memory.

This command could be useful when, after having sent the last variable field into label, you want to have labels automatically printed and dispensed, maybe under the control of label taken photosensor.

Syntax is:

?A3&0 , X

and parameters mean:

0 Zero. Fixed value to program this command
X It sets the infinite printing loop. Correct values are:
 0 Cycle Disabled
 1 Cycle Enabled

Settings done by this command are valid:

- Till you turn off printer
- Till the same command is sent again with another different parameter

USER CODE SETTINGS Ⓢ

With this command you can set a user code 3 characters long (alphanumeric digits); the code will be stored into permanent memory.

You can read the programmed user code by command ?54&5 (see command “?54&”) that will cause an answer, on serial line, from the printer.

Syntax is:

?57& XXX

Not available

W216 e W218

and parameter **XXX** means:

XXX 3 alphanumeric digits of the code

PRINTED LABELS COUNTER

With this command it's possible to set the starting value of an internal counter that counts printed labels. Counter increases +1 for each printed label and it can be tested by printer status request command ?54&23.

Syntax is:

?88&N

and parameter mean:

N Starting counter value (max. 6 digits)

PROGRAMMABLE DELAY AT THE BEGINNING OF PRINTING OPERATIONS ☺

It's possible to program printer to have a delay before printing operations begin.

The delay starts immediately after any event which causes the emission of a label: frontal button pushing, use of external signal for print consent, multiple batch copies, software commands for printing.

The delay is calculated in seconds.

Syntax is:

?A8&Sec

and parameter means:

Sec Seconds of delay. The value 0 (zero) causes delay to be disabled

WARNING:

The value of seconds programmed with ?A8& command is kept into permanent memory.

PRINT END SIGNAL TRANSITIONAL ACTIVATION

It is possible to activate print end signal by sending ?F1&ctSec command.
Printer will turn on Print End signal ctSec hundredths of second when command is received and decoded.

Syntax is:

?F1&ctSec

and parameter means:

ctSec Hundredths of second of activation of print end signal

PRINTING SPLIT ☹

It's possible to program printer to have a partially printed label (printing split)

This command is available in just some models and is a valid alternative with respect to backfeed (?63& command).

Syntax is:

?A9&N

and parameter means:

N Y coordinate (dots) of the point in which label must be splitted

I.e. if we have a label 500 dots long the command ?A9&100 will stop label printing at coordinate Y = 100; remaining part of label will be printed at next print request. in this way it is possible to print the END of first label (from coord. 101 to 500) and the BEGINNING of next one (from coord. 0 to 100).

PROGRAMMING LAYOUT 'A' INTO RAM ONLY ☹

With next command you can send layout 'A' into RAM instead of FLASH memory. This will save time for storing.

All data sent to RAM will be lost at power off.

Syntax is:

?B3&R

and parameter means:

R RAM usage. It can be:

0	Do NOT use RAM memory to store layout A
1	Use RAM memory to store layout A

At printer power on this parameter is set to zero, that is to use FLASH memory.

SERIAL PORT PARAMETERS PROGRAMMING – MODE 1

With this command is possible to program printer serial port parameters.

This command must be sent to printer via serial port (or parallel port, when available); then you have to turn printer off to make modifying to be active. After having received this command, printer will not recognize any other character incoming from serial or parallel port and it will be in a idle state until turned off /on again.

Syntax is:

?A7&P1 , P2 , P3 , P4

and parameters mean:

P1 Serial port Baudrate. Correct values are:

- 0** To set 2400 baud
- 1** To set 4800 baud
- 2** To set 9600 baud
- 3** To set 19200 baud
- 4** To set 38400 baud
- 5** To set 57600 baud

P2 It programs Parity of serial port. Correct values are:

- 0** No parity
- 1** Odd Parity
- 2** Even Parity

P3 It programs number of DATA bits. Correct values are:

- 0** To set 7 bit
- 1** To set 8 bit

P4 It programs number of STOP bits. Correct values are:

- 0** To set 1 bit
- 1** To set 2 bit

SERIAL PORT PARAMETERS PROGRAMMING – MODE 2

With this command is possible to program printer serial port parameters.

This command must be sent to printer via serial port (or parallel port, when available); then you have to turn printer off to make modifying to be active. After having received this command, printer will not recognize any other character incoming from serial or parallel port and it will be in a idle state until turned off/on again.

Syntax is:

?85& B , P

and parameters mean:

B One digit for Baudrate. It can only be:

- 0** = 2400 BAUD
- 1** = 4800 BAUD
- 2** = 9600 BAUD
- 3** = 19200 BAUD
- 4** = 38400 BAUD
- 5** = 57600 BAUD

P One digit for other serial parameters: Parity, Data Bit, Stop Bit. It can only be:

- 1** = No parity, 8 data bit, 1 stop bit
- 2** = Even parity, 7 data bit, 1 stop bit
- 3** = Odd parity, 7 data bit, 1 stop bit

CONTROL CHARACTERS HANDLING

The Next command allows you program the handling mode for control characters.

There are two admitted way of work:

1. Standard Mode: no input character is modified
2. Mainframe Mode: all input control characters (lesser than ASCII code 32) are transformed Into CR character (Carriage Return = ASCII code 13)

Syntax is:

?A2&0,M

and parameters mean:

0 Zero. Fixed value for this switch

M Working mode of control character handling. Correct values are:

0 Standard Mode

1 Mainframe Mode

NATIONAL CHARACTERS SETTING

It's possible to program the national characters set to use for text composition. Each set is distinguished by special characters belonging to the alphabet of that country. See paragraph "[National Characters Set](#)", appendix A for more informations.

Syntax is::

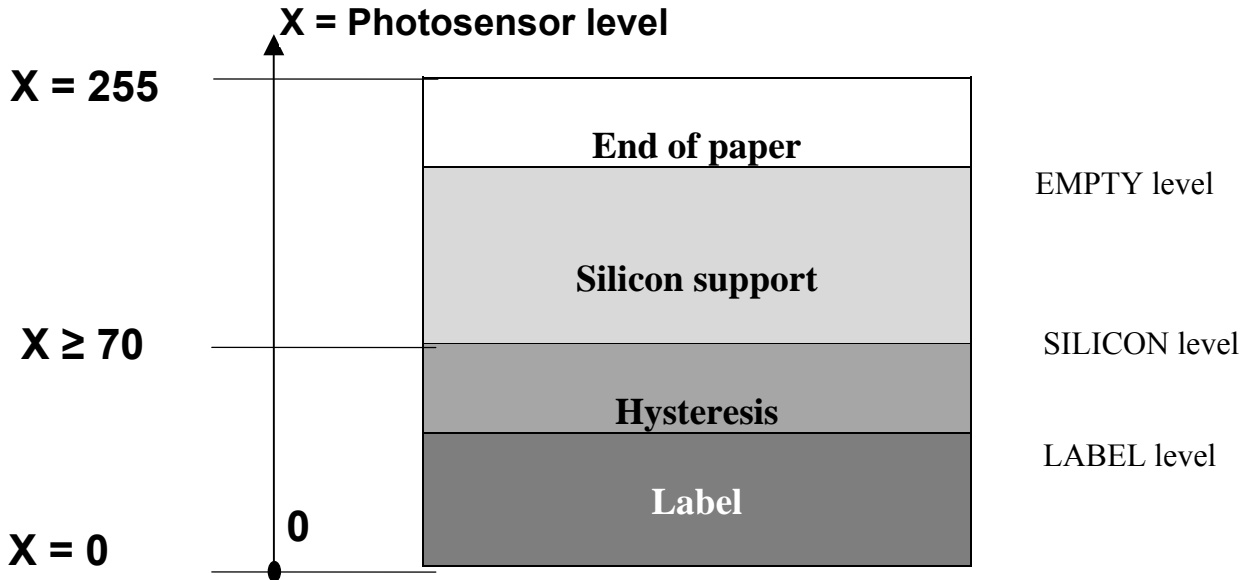
?A2&1,S

and parameters mean:

1	One. Fixed value for this switch
S	Index of set to use. Correct values are:
0	U.S.A.
1	Italy
2	Sveden
3	Norway
4	France
5	Germany
6	U.K.

MANUAL SETTINGS FOR LEVELS OF LABEL PHOTOSENSOR

The transparency values of used supports (paper or labels or tags) are read automatically by printer when you turn it on keeping print button pressed. Sometimes, in very particular cases, the labels alignment might be wrong because photosensor doesn't distinguish correctly the silicon support from the labels; in these cases it's possible to force the photosensor levels into printer by the next command. Referring to the next figure you can see printer manages four levels: one for label, one for an intermediate situation (or hysteresis), one for silicon support and one for end of paper:



Levels of transparencies Label lev. , Silicon lev. and Empty lev. are particular values on X axis and must be interpreted as above:

- Between **0** and **Label** Printer recognizes labels
- Between **Label** and **Silicon** Hysteresis: crossing around label-silicon or viceversa
- Between **Silicon** and **Empty** Printer recognizes the silicon support
- Upper than **Empty** Printer recognizes the absence of paper and goes into error

As told before, all transparency levels are acquired and kept in permanent memory by printer. If printer doesn't work correctly (that is when printer doesn't keep the correct alignment of labels) it's possible to force, by software, the values of levels.

Syntax is:

?71& K , X

and parameters mean:

- K** It set which level is programmed. Correct values are:
- 0** It makes the two levels **Label** and **Silicon** be coincident; they will be equal to the average of previous two distinct levels. X parameter is influent. **Label** and **Silicon** level will become equal to **Label + (Silicon – Label) / 2**
 - 1** It sets **Silicon** level with value passed in X
 - 2** It sets **Label** level with value passed in X
- X** Value to assign to level. Correct values are in the range 0 ... 255

SUGGESTION:

Usually you can solve abnormal situations by using the command **?71&0,0**.

Regulations of **Label** and **Silicon** levels need specific knowledge of printer working (see also paragraph “Sensors test”); contact your distributor for more information.

If you program a wrong command ?71&... you can restore standard situation by starting printer with print button pressed.

BACKUP OF RAM PERMANENT MEMORY INTO FLASH MEMORY ☹

This command allows you to backup printer's configuration parameters from permanent RAM memory to FLASH memory. Flash memory can be cancelled with specific procedures whereas RAM memory may be prone to electrical noise that may tamper its content.

In harsh electrical environment it could be necessary to enable this automatic procedure so, even if RAM memory contents are tampered, when printer is re-boot printer's configuration parameters are automatically reloaded from Flash memory.

Against an higher data safety some printer's procedures (i.e. realignment) will require more time to execute (tenths of second) because Flash memory needs to be erased before writing.

Syntax is:

?A2&16,B

and parameters mean:

16	Sixteen. Fixed value for this switch
B	Set backup mode:
0	Backup OFF (disabled)
1	Backup ON (enabled)

BACKUP OF PRINTING GRAPHIC BUFFER IN FLASH MEMORY ☹

Next command allows you backup entire graphic buffer (label image) in FLASH memory and restore it when printer is powered on.

Syntax is:

?A2&18,B

and parameters mean:

18 eighteen. fixed value for this switch

B Set backup mode:

0 Backup OFF (disabled)

1 Backup ON (enabled), active graphic buffer is saved when the command is received

WARNING:

FLASH memory area for this feature and LOGO storing (command ?37&) is the same so, if this feature is enabled, previously stored logo are lost.

If this feature is enable test label is obviously no longer composed at power-on. You still may get a test label printing by ?X0&... command.

PRINTER DEFAULT SETUP STORED IN FLASH MEMORY

Next command allows you save or erase printer parameters in FLASH memory.

Flash memory can be cancelled with specific procedures whereas RAM memory may be prone to electrical noise that may tamper its content.

In harsh electrical environment it could be necessary to enable this automatic procedure so, even if RAM memory contents are tampered, when printer is re-boot printer's configuration parameters are automatically reloaded from Flash memory.

Syntax is:

?B7&0, P1

and parameters mean:

0 zero, fixed value for this switch

P1

0	flash memory initialization
1	save configuration in flash memory
2	erase configuration from flash memory

SERIAL PORT PARAMETERS PROGRAMMING IN FLASH MEMORY ☹

Next command allows you program printer serial port parameters stored in FLASH memory.

Syntax is:

?B7&1, E, P1 , P2 , P3 , P4

and parameters mean:

- 1** one, fixed value for this switch
- E** 0 disables serial port configuration in flash memory
1 enables serial port configuration in flash memory
- P1** Serial port Baudrate. Correct values are:
- | | |
|----------|-------------------|
| 0 | To set 2400 baud |
| 1 | To set 4800 baud |
| 2 | To set 9600 baud |
| 3 | To set 19200 baud |
| 4 | To set 38400 baud |
| 5 | To set 57600 baud |
- P2** It programs Parity of serial port. Correct values are:
- | | |
|----------|-------------|
| 0 | No parity |
| 1 | Odd Parity |
| 2 | Even Parity |
- P3** It programs number of DATA bits. Correct values are:
- | | |
|----------|--------------|
| 0 | To set 7 bit |
| 1 | To set 8 bit |
- P4** It programs number of STOP bits. Correct values are:
- | | |
|----------|--------------|
| 0 | To set 1 bit |
| 1 | To set 2 bit |

```
'init
?B7&0,0
'serial port setup
?B7&1,1,5,0,1,0
'store
?B7&0,1
```

TEST LABEL IDENTIFICATION TEXT STORED IN FLASH MEMORY ☹

Next command allows you store a text in FLASH memory; the text is then written in test label.

Syntax is:

?B7&2, E, S

and parameters mean:

2 two, fixed value for this switch

E 0 disable text
1 enable text

S Text (32 char. max.)

SAMPLE:

```
'init
?B7&0,0
'text setup
?B7&2,1,ITALORA TEST
'store
?B7&0,1
```

Software Commands to manage EXTERNAL (Pick and Place) signals

Pick & Place working mode makes an external device (i. e. a PLC, a photosensor, and so on...) able to block or to enable the printing of a label.

When Pick & Place mode is active, three optoisolated signals are available. They are:

INPUT 1

PRINT_DEMAND – APPLY CONSENT

Input signal: it demands to print or it consents to apply

OUTPUT 1

PRINT_END

Output signal: it tells the end of print cycle

OUTPUT 2

AUX_OUT

Output signal: Enabled during ALARM condition (i.e. end of paper)

PRINT_DEMAND signal is useful to demand the print and it can work in 2 different modes (see next paragraph).

Refer to APPENDIX E for hardware wiring details.

The following commands are useful especially for printer models without display and they let these models manage external signals to have print controlled by an external device.

SIGNAL PRINT_CONSENT ☹

This input signal can be enabled or disabled by a software command.

Syntax is:

?A2&4, M

and parameters mean:

4	Four. Fixed value for this command
M	Enable / Disable signal PRINT_CONSENT. Correct values are:
0	Signal disabled
1	Signal enabled

The setting done by this command is kept into permanent memory.

SIGNAL APPLY_CONSENT ☹

This input signal can be enabled or disabled by a software command.

Syntax is:

?A2&17, M

and parameters mean:

17	Seventeen. Fixed value for this command
M	Enable / Disable signal APPLAY CONSENT. Correct values are:
0	Signal disabled
1	Signal enabled

When this signal is enabled printer prints labels and waits for consent signal before applying them.
The setting done by this command is kept into permanent memory.

USING PRINT CONSENT SIGNAL AS A “PRINT BUTTON”

As described into ‘Appendix B’, printers have 3 I/O signals, one of them is input Print Consent. With this command you can choose the using mode for this signal.

Two available modes to use Print Consent signal are:

0. To use it after a printing command (such as command ?14&...). In this way the signal causes the printing of a label only if a print batch queue is already open into printer: in all other cases no label will be printed.
1. To use it directly to produce a printing, even if no print batch queue was open. Each time this signal gives its consent, you’ll have a label printed.

Syntax is:

?A2&8,X

and parameters mean:

- 8** Eight. Fixed value for this switch
- X** Using mode for Print Consent signal. It can be:
 - 0** Print Consent submitted to a print batch queue
 - 1** Print Consent independent and direct

PRINT CONSENT LOGIC LEVEL PROGRAMMING

NOTE: See paragraph [Print Consent signal](#).

Normally, if you use an external connection, Print Consent signal is active high. However it is possible, by a software command, to invert the logical level of this signal, so adapting to all external situations.

Syntax is:

?A2&9,L

and parameters mean:

- 9** Nine. Fixed value for this switch
- L** It sets the logical level of Print Consent signal. It can be:
 - 1** Standard logical level
 - 0** Inverted logical level

SIGNAL PRINT_END

This output signal can be programmed by a software command to work in two different modes.

Syntax is:

?A2& 5, M

and parameters mean:

5	Five. Fixed value for this command
M	Mode of working of PRINT_END signal. Correct values are:
0	Signal disabled
1	First Mode work
2	Second Mode work

The setting done by this command is kept into permanent memory.

There is another old command that can be used to select signal working mode without changing its enabled/disabled status.

Syntax is:

?66& M

and parameter means:

M	It selects the mode of using PRINT_END signal. Correct values are:
0	Use of First mode
1	Use of Second mode

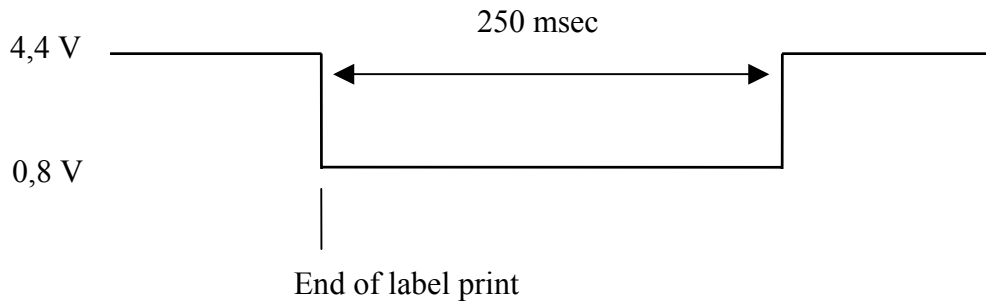
The setting done with this command is stored into permanent memory of printer.

First Mode:

The first mode foresees the activation of an impulse (optotransistor in this phase is conducting) of 250 milliseconds counted starting from the end of print cycle.

In this phase the signal PRINT_END change from a logic high level (~4,4V) to a logic low level (~0,8 V). The lesser time between two successive labels is 250 msec.

Hereafter is shown the sketch of signal timing.



Second Mode:

The second mode foresees optotransistor conducts during all movement of label so, in this period of time the signal level is low.

Here below is shown the sketch of signal timing.



Refer to APPENDIX E for hardware wiring details.

PRINT END LOGIC LEVEL PROGRAMMING

Normally, if you use an external connection, Print End signal is active low.
However it is possible, by a software command, to invert the logical level of this signal, so adapting to all external situations.

Syntax is:

?A2&10,L

and parameters mean:

10	Ten. Fixed value for this switch
L	It sets the logical level of Print End signal. It can be:
1	Standard logical level
0	Inverted logical level

AUXILIARY ALARM LOGIC LEVEL PROGRAMMING

Normally, if you use an external connection, Auxiliary Alarm signal is active low. However it is possible, by a software command, to invert the logical level of this signal, so adapting to all external situations.

Syntax is:

?A2&11,L

and parameters mean:

- 11** Eleven. Fixed value for this switch
- L** It sets the logical level of Auxiliary Alarm signal. It can be:
 - 1** Standard logical level
 - 0** Inverted logical level

PRINT CONSENT MINIMUM ACTIVATION TIME PROGRAMMING

Activation time of Print Consent signal (time needed to signal to be considered valid by printer) is calculated between arise and fall down fronts.

Normally, activation time must be greater than 80 msec (it means that if signal stays active for a lesser period, it is not considered valid by printer).

This timing, however, can be modified via software.

Programmed values can change from a minimum of 0 msec to a maximum of 990 msec.

If you program an activation time equal to zero, signal will work “on level”; a spike will be enough to be considered valid by printer.

In this condition also the fall down front is not important: one always high signal will be considered always valid by printer.

Syntax is:

?A2&12,D

and parameters mean:

12 Twelve. Fixed value for this switch

D Tens of milliseconds. correct values are in the range 0...99

Example: ?A2&12,3 Minimum activation time will be 30 milliseconds

DELAY AFTER PRINT CONSENT

NOTE: See paragraph [Print Consent signal](#).

With this command you can set a delay between print consent signal activation and beginning of printing.

This feature is useful when external photosensor for print consent signal is far from label printing area. Delay is expressed in milliseconds.

Syntax is:

?A2&13,D

and parameters mean:

13 Thirteen. Fixed value for this switch

D Delay (in milliseconds) between print consent and printing.

Example: **?A2&13,500** Delay of half a second after each valid print consent signal

Software commands for APPLICATOR signals control (I/O 16+16)

I/O expansion board permits to add 16 INPUTS and 16 OUTPUTS lines to printers. All additional I/O lines are optoisolated.

Input signals control and output signals driving may be programmed by user with a simple sequence of ASCII commands, see specific hardware and programming manual of expansion board for details.

Following commands are available to enable or disable an applicator cycle or to test I/O channels:

SWITCH ?A2&7,...: ACTIVATING OF I/O SIGNAL CONTROL CYCLE

With this command it's possible to enable or disable the control cycle for I/O signals to manage external devices such as pneumatic pistons, photosensor cells and so on...

NOTE:

Specific commands for the cycle of I/O signals must be done following the instructions mentioned into the manual "Hardware and Programming manual for I/O expansion board"

Syntax is:

?A2&7,C

and parameters mean:

- 7** Seven. Fixed value for this switch
- C** It sets the cycle of I/O signals. Correct values are:
 - 0** Cycle Disabled
 - 1** Cycle Enabled

I/O OUTPUT SIGNALS CONTROL

With this command it's possible to enable or disable an output signal of the additional I/O board.

Syntax is:

?B1&N,S

and parameter mean:

N	channel number form 0 to 15
S	signal status
0	Disabled
1	Enabled

I/O INPUT SIGNALS CONTROL

With this command it's possible to get the status of 16 input signals of the additional I/O board.

Syntax is:

?B2&

if printer is equipped with a display input signals status is shown with a sequence made by "0" or "1" based on signal status; same information is sent by serial port.

COUNTERS AND CLOCK

WHAT'S A COUNTER?

Counters are particular fields (texts or barcodes) put into a label. With them it's possible, during a batch print, to do a computation (increment or decrement) printing on label the number counter has arrived to; each label can be marked by a univocal number that increases or decreases while printings are done.

Counters can be done by at most 16 digits and can be merged with fixed parts to put before or after the number of computation.

Counters are done by two main elements: Calculation Engines and Print Images.
Let's see them in detail.

CALCULATION ENGINES

They are the physical permanent memory locations (into printer) that contain the values reached during counting.

There are four available Engines for calculation: their indexes go from #0 to #3

Calculation Engines are independent from Print Images; it means you can use the same engine to fill one or more images. This feature makes you able to print on label two distinct fields (so two distinct Images), using the same Engine to make calculation.

PRINT IMAGES

Print Images are fields, into the labels, in which you decide to put and print the result of calculation.

You can specify for each Image all parameters for printing, such as the co-ordinates into label, which font (for texts) or which kind of barcode you want to print, and so on. Besides to print parameters you can specify the link with the Calculation Engine which will have to execute the computation.

There are six available Print Images: their indexes go from #0 to #5.

NOTE:

When enabled, counters are managed during batch printing and indirect programming, they are NOT managed if a print of the last composed graphic buffer is requested (i.e. pressing front-panel button)

Commands necessary to counter programming are the next:

?18&... Description of Calculation Engines

?82&... Description of Print Images

?83&... Activation/Deactivation of Engines and Images

CALCULATION ENGINES SETTINGS

This command programs all the parameters for computation.

Syntax is:

?18& N , ST , MAX , MIN , U/D , MOD , INC

?18& N , ST , U/D , MOD , INC

STW, 2000_280 models

and parameters mean:

N	Number of engine to use: Correct values are in the range 0 ... 3
,	Comma: separator character
ST	Starting values; its number of digit defines how many digits must be printed on label
MAX	Top value of calculation: after increasing counter has arrived to it, the calculation restart from MIN
MIN	Lowest value of calculation: after decreasing counter has arrived to it, the calculation restart from MAX
U/D	Direction of computation. Correct values are in the range: 1 for increasing computation 2 for decreasing computation
MOD	Modulus. Number of identical labels printed before counter changes its value
INC	Increasing or decreasing. Each time counter changes its value it sums or subtracts this value

NOTE:

ST, MAX, MIN, and INC can be used up to 16 digits (0 - 9999 9999 9999 9999)

Example: ?18&2,0035,1100,20,1,3,15

With this example you are programming the next parameters:

1. Calculation Engine n° 2
2. Start value set to 35 printed with 4 digit
3. Maximum value of Engine limited to 1100
4. Minimum value of Engine set to 20
5. Increasing counter
6. 3 identical labels printed before upgrading counter
7. Step of increment set to 15

Into the 1st, the 2nd and the 3rd label is printed the value “0035”; into the 4th, the 5th and the 6th is printed the value “0050” and so on till counter reaches the value “1100”. When this value is reached, the counter will be set to “0020” and it will keep counting until a software command will stop it.

PRINT IMAGES SETTINGS

With this command you can program all parameters related to print of counter on label.

These settings make you able to create a composed barcode, that is a barcode made of two different part: one is fixed and the other is incremental (or decremental).

The fixed parts linked to counters are read from those stored into permanent memory as fixed texts (see paragraph “Fixed texts programming”).

You can program a Print Image as Text or as Barcode with the next two commands:

PRINT IMAGE IN TEXT FORMAT:

Syntax is:

?82& N , 0 , X , Y , P , G , MM , E , FT , TI

and parameters mean:

N	Number of Image you want to program. Correct values are in the range: 0 ... 5
0	Zero: fixed value for texts
X	X co-ordinate, expressed in dot, of field origin into label
Y	Y co-ordinate, expressed in dot, of field origin into label
P	Print direction
G	Text font generator you want to use
MM	Two numeric digit for magnification of base and height of character
E	Number of Engine you want to link the Image. Correct values are in the range 0 ... 3
FT	Fixed Text parameter: 0 No fixed text 1 Fixed text before counter 2 Fixed text after counter
TI	Index of text to add: correct values are in the range 0 ... 49

Example: ?82& 3, 0, 120, 75, 3, 5, 11, 2, 1, 15

With this example you program the Image n° 3 as a Text. Print co-ordinates are X=120 and Y=75, print direction is 3, font is “New Century” (n° 5) with magnification set to 1 for base and height too; the image is linked to Calculation Engine n° 2.

Fixed text with index 15 is added before counter digits.

PRINT IMAGE IN BARCODE FORMAT:

Syntax is:

?82& N , 1 , X , Y , D , C , H , E , TF , IT

and parameters mean:

N	Number of Image you want to program. Correct values are in the range: 0 ... 5
1	One: fixed value for Barcodes
X	X co-ordinate, expressed in dot, of field origin into label
Y	Y co-ordinate, expressed in dot, of field origin into label
P	Print direction
C	Type of Barcode to use
H	Height, expressed in dot, of barcode
E	Number of Engine you want to link the Image. Correct values are in the range 0 ... 3
FT	Fixed Text parameter: 0 No fixed text 1 Fixed text before counter 2 Fixed text after counter
TI	Index of text to add: correct values are in the range 0 ... 49

Example: ?82& 2, 1, 120, 75, 1, 5, 110, 3, 2, 7

With this example you program the Image n° 2 as a Barcode; print co-ordinates are X=120 and Y=75, print direction is 1, Barcode used is EAN8 (n° 5) with height = 110 dots; the image is linked to Calculation Engine n° 3.

Fixed text with index 7 is added after counter digits.

TURNING COUNTERS ON / OFF ☹

Following command makes you able to turn counting engines and print images on/off.

When you turn on a counting engine you tell printer to start counting (it means that if you activate only a counting engine you won't have any counting field printed into label).

When you turn on a print image you activate the field into label (it means that if you activate only a print image without activating its counting engine you will have always the same digits printed into label).

To have a correct print of a counter you must activate both counting engine and print image.

Syntax is:

?83& E/I , N , S

and parameters mean:

E/I	It tells if command refers to Engines or to Images. Correct values are:
0	Command for Counting Engines
1	Command for Print Images
N	Selection of Engine or Image. Correct values are in the ranges:
0 ... 3	if E/I = 0 (Engines command)
0 ... 5	if E/I = 1 (Images command)
S	State of selected item. Correct values are:
0	Turn OFF
1	Turn ON

A COMPLETE EXAMPLE ABOUT COUNTERS

This example shows the use of 4 Print Images linked to 2 Counting Engines two by two; for each engine one image prints counter as a text, the other image prints it as a barcode. Note that some fixed texts are linked to some print image

```
?00& ; It erases print buffer memory

?73&0;Before ; It programs 1st fixed text into
              permanent memory
?73&1;After ; It programs 2nd fixed text into
              permanent memory

?83&0,0,0 ; It turns off counting Engines
?83&0,1,0
?83&0,2,0
?83&0,3,0

?83&1,0,0 ; It turns off print Images
?83&1,1,0
?83&1,2,0
?83&1,3,0
?83&1,4,0
?83&1,5,0

?18&0,10,40,10,1,1,10 ; It programs 2 Engines
?18&3,1000,1100,1000,1,1,25

?82&0,1,10,20,3,14,50,3,1,0 ; It programs 4 Images
?82&1,0,280,20,3,5,11,3,1,0
?82&2,0,480,20,2,16,11,0,0,0
?82&3,1,520,20,3,14,50,0,2,1

?83&1,0,1 ; It turns on Images
?83&1,1,1
?83&1,2,1
?83&1,3,1

?83&0,0,1 ; It turns on Engines
?83&0,3,1

?14&10 ; Batch print of 10 labels

?83&0,0,0 ; It turns off Engines
?83&0,3,0

?83&1,0,0 ; It turns off Images
?83&1,1,0
?83&1,2,0
?83&1,3,0
```

INTERNAL CLOCK FUNCTIONS

The internal clock (called Real Time Clock or RTC) has the double function of calendar and clock. This device can print fields containing: date, hour or some combinations of these informations. The RTC is provided with an internal battery that assures its work even if printer is turned off.

You have at most two available fields for RTC use in a label format, they may be reconfigured in a different way within each label format. Active configuration is the last sent one.

Commands for RTC are the next:

- **?47&...** Settings of hour and date
- **?48&...** Settings of field into label
- **?20&...** Field On/Off into label

CLOCK ON / OFF

With this command you can turn On or Off each of two fields available for printing of RTC data. When one of these fields is On it is inserted into label and RTC data are printed on every label

Syntax is:

?20& N , S

and parameters mean:

N Number of the field you want to turn on or off. Correct values can be:

2 1st RTC field

3 2nd RTC field

S State of field. Correct values are:

0 field is NOT printed

1 field is printed

CLOCK-FIELDS PARAMETERS PROGRAMMING

With this command is possible to program all parameters of fields for clock data.

This command has two different cases, depending on type of field you are programming: text or barcode.

FIELDS IN TEXT FORMAT

This command programs a clock/date human readable field in text format.

Syntax is:

?48& N , T , X , Y , D , G , MM , F

and parameters mean:

N	Number of the field you want to program. Correct values can be: 2 1 st RTC field 3 2 nd RTC field
T	Type of data to print. Correct values can be: 0 Date 1 Hour
X	X co-ordinate, expressed in dot, of field origin into label
Y	Y co-ordinate, expressed in dot, of field origin into label
D	Print Direction
G	Font generator
MM	Two numeric digit for magnification of base and height of character
F	Hour – Date data Formatting: when T = 0 it is: F = 0 DD/MM/YY F = 1 MM/DD/YY F = 2 YY/MM/DD F = 3 DD/MM/YYYY F = 4 MM/DD/YYYY F = 5 YYYY/MM/DD F = 6 YYYY/MM/DD hh:mm:ss when T = 1 it is: F = 0 hh:mm:ss F = 1 hh:mm

Where:

DD	= day	(2 digits)
MM	= month	(2 digits)
YY	= year	(2 digits)
YYYY	= year	(4 digits)
hh	= hour	(2 digits)
mm	= minutes	(2 digits)
ss	= seconds	(2 digits)

FIELDS IN BARCODE FORMAT

This command programs a clock/date field in barcode format.

Syntax is:

?48& N , 2 , X , Y , D , C , H , S

and parameters mean:

N	Number of the field you want to program. Correct values can be: 2 1 st RTC field 3 2 nd RTC field
2	Two. Fixed value for Barcode fields
X	X co-ordinate, expressed in dot, of field origin into label
Y	Y co-ordinate, expressed in dot, of field origin into label
D	Print Direction
C	Type of Barcode you want to use
H	Height, expressed in dot, of barcode
F	Hour / Date data Formatting: F = 0 DDMMYY F = 1 MMDDYY F = 2 YYMMDD F = 3 hhmmss F = 4 hhmm F = 5 YYMMDDhhmmss F = 6 DDMMYYYY F = 7 MMDDYYYY F = 8 YYYYMMDD F = 9 YYYYMMDDhhmmss F = 10 DD/MM/YYYY hh:mm:ss F = 11 DD/MM/YYYY hh:mm F = 12 DDMMYYYY hhmm

Where:

DD	= day	(2 digits)
MM	= month	(2 digits)
YY	= year	(2 digits)
YYYY	= year	(4 digits)
hh	= hour	(2 digits)
mm	= minutes	(2 digits)
ss	= seconds	(2 digits)

HOUR / DATE STORING

Next command programs the internal clock storing into it the passed values of hour and date. The new settings are kept in permanent memory.

Syntax is:

?47& YYMMDD , d , M , K , hhmmss

and parameters mean:

YY	2 digits for Year. For ex. "2001" = "01"
MM	2 digits for Month
DD	2 digits for Day
d	Day into the week. It can be: 0 Sunday 1 Monday 2 Tuesday 3 Wednesday 4 Thursday 5 Friday 6 Saturday
M	Mode to print the hour into label. It can be: 0 0...24 1 0...12 AM / 0...12 PM
K	It interprets the hour of programming: If M = 0 K is ignored If M = 1 K = 0 AM K = 1 PM
hh	2 digits for hour
mm	2 digits for minutes
ss	2 digits for seconds

Example: ?47&010528, 5, 1, 1, 041035

This command will program the clock with the date "28 May 2001", Friday, hour 4:10:35 PM. It will be used AM / PM for hours

BEST BEFORE DATE

BEST BEFORE DATE

It's possible to program one or more fields into a layout as Best Before Date. The final date is calculated as offset (in days) starting from printer internal clock date.

Syntax is:

?75& N , I , D , X , Y , G , EE , DD

And parameters mean:

N	Uppercase letter showing the layout you are programming
,	Comma - separator character
I	Field index into layout; correct values are: 0..99
D	Text printing direction
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
G	Font index
EE	Two numeric digit for magnification of base and height of character
DD	Two numeric digit for Days offset. Correct values are: 1 ... 9999

Example: **?75& C, 4, 3, 550, 15, 5, 11, 365**

In this example you program field n° 4 into layout C as best before date; printing direction is 3, co-ordinates are X=550 and Y=15, font generator is n° 5, no magnification, days of validity are 365.

MACRO INTERPRETER MODE

*Macro Interpreter Mode let **italora** printers be connected directly to any kind of serial device (for example scales, PLC, counters, and so on...) without modifying their firmware to build a particular serial output. These devices can send to printer just the data strings containing the fields to write on label.*

Macro Interpreter programming provides printers the necessary flexibility to adapt to a very high number of serial devices.

Macro Interpreter mode is based on the use of internal printer layouts. In particular the steps to do to use correctly this mode are the following:

- Programming of internal printer layouts
- Programming of Macro Interpreter commands
- Serial device connecting

Once you have programmed printer to work in Macro Interpreter mode, it doesn't recognize anymore any other programming command but the one to finish Macro Interpreter mode (the command is "!"\$: see chapter "Realtime Commands")

The command to program Macro Interpreter mode is "?59&..." that is done by some switches. Let's see them in detail.

PROTECTED PROTOCOL

This command enables or disables protected protocol option for incoming data. If this option is enabled then ASCII values for Start and Stop character must be specified. This switch is compulsory to correctly program Macro Interpreter.

Syntax is:

?59&0, Status, Start, Stop

and parameters mean:

0 Zero. Fixed value for the switch
Status Uppercase letter for layout to use. Correct values are in the range:
 0 Disabled
 1 Enabled
Start ASCII decimal value of Start character (when protocol is enabled)
Stop ASCII decimal value of Stop character (when protocol is enabled)

Example:

Consider the next incoming data record from a scale:

{	N	E	T	_	W	E	I	G	H	T	}
---	---	---	---	---	---	---	---	---	---	---	---

As you can see from the above sketch, the incoming record is done by 10 bytes, enclosed between brackets that we use as Start and Stop characters. ASCII value is '{' = 123 and '}' = 125.

To do so you have to use command ?59&0... with the next syntax: **?59&0, 1, 123, 125**

FIRST SWITCH: VARIABLE FIELDS PROGRAMMING

This command programs the order of the variable fields to extract from data coming from external serial device.

This switch is compulsory to correctly program Macro Interpreter.

Syntax is:

?59&1, Layout, N_Fields, Data

and parameters mean:

1 One. Fixed value for the 1st switch

Layout Uppercase letter for layout to use. Correct values are in the range:
A...Z

N_Fields Number showing how many variable fields are into the layout. Maximum is: 19

Data Couples of Start / Stop values of fields into incoming record

Example:

Consider the next incoming data record from a scale:

Byte #:	0	1	2	3	4	5	6	7	8	9	10	11
	*	N	E	T	_	W	E	I	G	H	T	*

As you can see from the above sketch, the incoming record is done by 12 bytes, whose index starts from 0.

If you have to print the field NET_WEIGHT you have to extract bytes from 1 to 10.

To do so you have to use command ?59&1... with the next syntax: **?59&1, A, 1, 1, 10**

This command refers to layout 'A'.

SECOND SWITCH: INCOMING RECORD STRUCTURE

This command programs the structure of incoming data record; for example it's possible to program the dimension or the terminator character of record.

It's possible to read from incoming record which layout must be activated before printing. This switch is compulsory to correctly program Macro Interpreter.

Syntax is:

?59&2, PosLay, NCFor, Type, DimTer

and parameters mean:

PosLay Position of the 1st digit for index of layout. Correct values are: 0...255

NCFor Length in byte of field showing the number of layout. Correct values are: 0...4
If you program this field with value 0 the 'A' layout will be always activated

Type It chooses if incoming record is always done by the same number of characters (fixed length) or it is always ended by the same terminator character (fixed terminator). Correct values are:

0 For fixed length records

1 For fixed terminator records

DimTer If Type = 0 it shows the **Dimension** of incoming record.

If Type = 1 it shows the ASCII code of **Terminator** character.

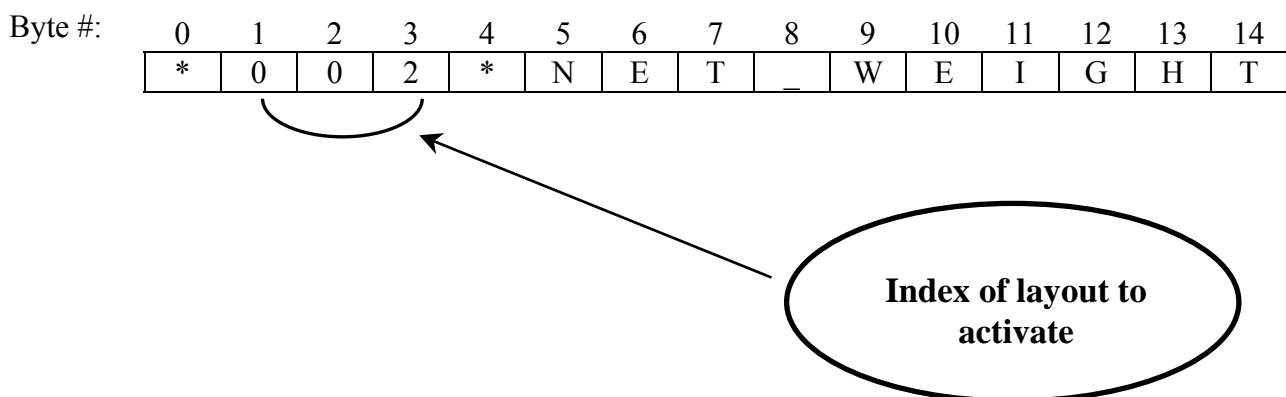
Correct values are in the range: 1 ... 255

NOTE:

Layout 'A' corresponds to index 0, layout 'B' to index 1 and so on...

Example: ?59&2, 1, 3, 0, 15

This example programs the length of incoming record, which will be always a fixed length one (0) and 15 bytes long (15). Furthermore, the number of layout to activate is read starting from byte #1 (1) and getting three characters (3); index of layout is 002, so layout is 'C'.



THIRD SWITCH: FILTER OF INPUT CHARACTERS

This command programs a set of characters which must never be printed into the fields composed by Macro Interpreter.

All characters belonging to this set will be normally received as input, but they will never appear into composed fields.

This switch is **not** compulsory to correctly program Macro Interpreter.

Syntax is:

?59&3, DimSet, DataSet

and parameters mean:

DimSet It shows the dimension of (it means the number of characters into) the set to filter. Correct values are in the range 1 ... 20

DataSet This field lists all characters to filter, written as a list

Example: ?59&3, 2, £\$

This example programs a 2 characters set to filter. Two characters are: '£' and '\$'. All two these characters will never appear into the fields composed by Macro Interpreter.

FOURTH SWITCH: SETTING A BATCH PRINT

Macro Interpreter can read into incoming record how many copies of last print it has to do. This switch is compulsory to correctly program Macro Interpreter.

Syntax is:

?59&4, PosCop, NCCop

and parameters mean:

PosCop Position of the 1st digit for number of copies. Correct values are: 0...255

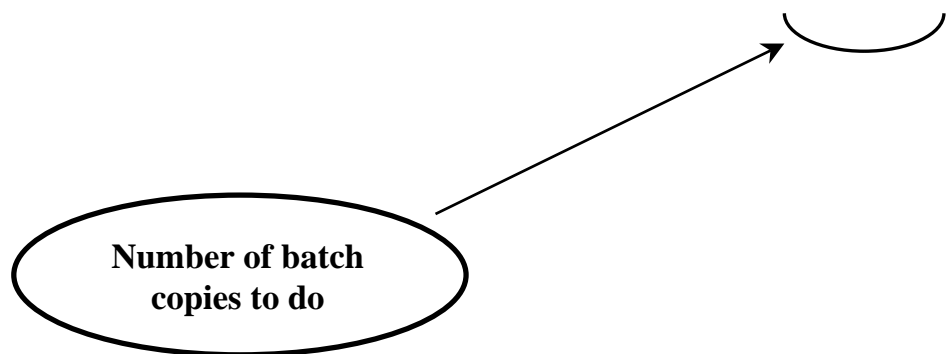
NCCop Length in byte of field showing the number of copies. Correct values are: 0...4

If you program this field with 0, no batch print will be done and you will have only one label printed

Example: ?59&4, 12, 3

This command reads the number of batch prints directly from incoming record. This number starts at the 12th byte and it is 3 characters long (see below).

Byte #:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	*	N	E	T	_	W	E	I	G	H	T	*	0	0	5



AN EXAMPLE OF MACRO INTERPRETER PROGRAMMING:

Suppose that:

- Storing of layouts A (with 2 variable fields) and B (with 1 only variable field) into printer is already done
- Serial device has the next two records:

1) Record to activate layout A

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
0	*	0	1	*	W	E	I	G	H	T	*	P	R	I	C	E	.	.	@

2) Record to activate layout B

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	*	0	2	*	O	N	L	Y	_	P	R	I	C	E	@

- '@' (ASCII character # 64) is the terminator character of the incoming record
- We want to filter 'M' and 'm' characters

The code to implement this feature is the following: (/*...*/ = comments)

```
?59&1,A,2,5,10,12,18      /* 'A' layout, 2 variable fields, start/end data*/
?59&1,B,1,5,14           /* 'B' layout, 1 variable field, start/end data*/
?59&2,0,1,1,64          /* Layout Position = 0, one digit, string with terminative char.,
                          terminative character = ASCII(64) */
?59&3,2,Mm              /* Filtering alphabet dimension = 2,
                          filtering character(s) = 'M' and 'm'*/
?59&4,2,2               /* Batch copies number position = 2, field length = 2 */
```

SENSORS AND DIGITAL INPUT TEST, MESSAGES

SENSORS AND DIGITAL INPUTS TEST BY SERIAL PORT

With this command it's possible to have via serial port the working values read from internal printer sensors. This feature may be very useful to make tests on printer status.

When printer receives this command it will reply with 1 byte representing the value read from requested sensor.

Syntax is:

?54& N

and parameter **N** indicates which sensor you want to read. It can be:

- 0** Sensor of printhead temperature
- 1** Sensor of black intensity trimmer
- 2** Sensor of paper photocell
- 3** Sensor of label taken photocell
- 6** Sensor of thermal transfer ribbon
- 7** Sensor of paper reflective photocell
- 8** Start Print signal (stampanti senza scheda di espansione)
- 9** Auxiliary channel, internal connector Y22

Values returned from printer can be interpreted according to the next table:

N	Example of values returned from printer
0	160 = normal (ambient temperature) 76 = max (~60° C) Degrees equation: $[94 - (\text{Val} * 3 / 7)]$
1	0 = top intensity 255 = lowest intensity
2	15 = with label 70 = with silicon support
3	220 = with label 0 = without label

6	80 = with black ribbon present
7	180 = with label 0 = without label
8	250 = signal disabled 0 = signal enabled

SYSTEM INFO BY SERIAL PORT

This command let you questionate printer to have, via serial port, particular informations like firmware version or user code programmed with command “?57&”.

Syntax is:

?54& N

and paramater **N** indicates which answer you want to have. It can be:

4	Firmware version
5	User code
10	Printer name
11	Base fonts identifier (i.e. FNT1)
12	FLASH memory type available
14	SRAM size available
20	Encoder detected speed
22	Applicator cycle upload
23	Printed labels counter
30	Counting ENGINE 0 value that will be printed
31	Counting ENGINE 1 value that will be printed
32	Counting ENGINE 2 value that will be printed
33	Counting ENGINE 3 value that will be printed

NOTES:

1. When N = 5 (User Code) the answer string is made by 3 bytes, all other answer strings are ended by <Carriage Return> character (ASCII code 13 decimal = 0D Hex)

SENSOR STATUS REQUEST

With this command it's possible to read the working values of various internal sensors present into the printer. The values can be read from serial port or displayed onto the display. (for models provided with it).

This function is very useful to have a control of working status of printer.

When printer receives this command, it will ask the desired sensor for its status value and then it will be transmitted or displayed on display.

If printer answers by serial port, it will transmit 1 byte containing the value of sensor.

Syntax is:

?Y3& N , R

and parameters mean:

N Number of sensor to be read. Correct values are:

- 0** Printhead temperature
- 1** Printhead percent power
- 2** Label sensor
- 3** Taken label sensor
- 4** Ink ribbon sensor

R Type of answer. Correct values are:

- 0** Answer transmitted by serial port
- 1** Answer visualized on display

Values read from printer can be interpreted looking at the next table:

N	Example of values returned from printer
0	160 = normal (room temperature) 76 = maximum (~ 60° C) Degrees equation: $[94 - (\text{Val} * 3 / 27)]$
1	0 = maximum power 255 = minimum power
2	15 = label present under sensor 70 = silicon support present under sensor
3	220 = label not yet taken 0 = label taken
4	0...700 = Ink ribbon present > 700 = Ink ribbon not present

DATA “DUMP” MODE

In this mode all data byte incoming from serial or parallel port are printed on a label. Data can be printed in the three formats: Hexadecimal, Decimal or ASCII. This feature can be useful to check if serial or parallel connection is correct.

Syntax is:

?Y8& F , 9

and parameters mean:

- F** Format of data printing. It can be one of next three:
- 1** Hexadecimal Format
 - 2** Decimal Format
 - 3** ASCII Format
- 9** Nine. Fixed value to program this command

TEST LABELS

By this command it is possible to compose, and then to print, some test labels into printer's graphic memory.

Syntax is

?X0&T

and parameter means:

T	Label index, it may have value:
0	Label with coarse dots grid
1	Label with fine dots grid and lines
2	Base test label with printer's parameter
5	Info about FLASH memory type installed
8	Info about type and quantity of SRAM and FLASH memory installed,

Example:

?X0&1

?01&

This sequence creates and print a test label.

TRANSMISSION OF A MESSAGE TO DISPLAY

NOTE:

This paragraph is valid only for models with display.

With this command it's possible to transmit (via serial or parallel port) a message 16 byte maximum long to display

Syntax is:

?Y2&Mess

and parameter means:

Mess String of message to display

Example: ?Y2&Hello world

This example prints the string "Hallo world" on printer display

Commands specific for FH – C

The FH–C provides printing on continuous motion packaging materials, such as all flexible films, labels, cartons and foils. Further details on specific user manual.

Next commands are only for FH–C.

ENCODER RESOLUTION

Next command programs the encoder resolution.

Syntax is:

?X1&0,N , where

N encoder resolution * 4

Encoders provided by **italora S.p.A.** have resolution = 5000, so N = 20000

ENCODER WHEEL DIAMETER SETTINGS

It's possible to program with a software command the diameter of encoder wheel.

Syntax is:

?X1&1,D , where

D diameter of encoder wheel in millimeters

Encoder provided by **italora S.p.A.** have a 70 mm diameter wheel.

CONSTANT SPEED SYSTEMS

With this command you can tell FH-C if system speed is constant or it isn't.

Syntax is:

?X1&2,B , where

B can be: **0** = (variable speed) or **1** = (constant speed)

PRINTING PERIOD

It's possible to have periodic printings by programming the number of millimeters between each printings.

Syntax is:

?X1&3,P , where

P Millimeters between two consecutive printings

FH-C prints a copy each time P millimeters of film have run under printhead.

To disable this option you must use this command with parameter zero: **?X1&03,0**

WARNING This command is neglected if you use a delay between an external signal and fall down of printhead (see command ?X1&9,... here below).

SAVING RIBBON BEFORE PRINTING OPERATIONS

It's possible to make ribbon motor move even if printhead is still lift up before printing starts. This is useful to stretch correctly ink ribbon.

This command programs number of millimeters to do with ink ribbon before printing starts.

Syntax is:

?X1&5,X , where

X Number of mm. A typical value is 1

SAVING RIBBON AFTER PRINTING OPERATIONS

It's possible to make ribbon motor move even when printhead is lift up after the end of printing. This is useful to stretch correctly ink ribbon.

This command programs number of millimeters to do with ink ribbon after printing ends.

Syntax is:

?X1&6,X , where

X Number of mm. A typical value is 1

DELAY BETWEEN PRINthead DESCENT AND START OF PRINTING

This command let you program a delay between printhead going down and start of printing. Delay is determined by time printhead takes to go down against the roller and to finish vibrations. The higher is mechanical distance between printhead and printing roller the higher must be this delay.

Delay is expressed in milliseconds. Typical values are in the range 10 ... 20.

?X1&8,X , where

X Milliseconds of delay for printing start

DELAY BETWEEN EXTERNAL SIGNAL AND PRINthead DESCENT

This command lets you set up a delay between an external signal identification (it can be used to recognize a black mark on the film) and printhead going down. It will make you able to synchronize printhead moving to system mechanical configuration. Parameter is expressed in millimeters.

Syntax is:

?X1&9, X , where

X Millimeters of delay between external signal and printhead going down

WARNING If parameter X is different from 0, command “?X1&03,...” will be ignored

ADVANCE OF PRINthead RAISING UP WITH RESPECT TO THE END OF PRINTING

It is possible to enable the signal to make printhead raise before printing in progress ends. It's useful to cancel times of reaction of mechanical elements (piston, electrovalve, etc...) and to optimize saving of inked ribbon. This parameter is expressed in millimeters and its typical value is 3.

Syntax is:

?X1&10, X , where

X Millimeters of advance for printhead raising with respect to the end of printing

ADVANCE OF ACTIVATION OF RIBBON BRAKE (WITH RESPECT TO THE END OF PRINTING)

This command lets you anticipate the activation of ribbon brake with respect to the end of printing. Parameter, expressed in millimeters, gives you the chance to increase the saving of inked ribbon. A typical value is 1.

Syntax is:

?X1&11, X , where

X Millimeters of ribbon braking advance with respect to the end of printing

PRINTED COPIES CONTROL

This command let FH-C control the max. number of printed copies to do. When this number is reached FH-C will stop printing operations.

Copies number is set by?14& command.

?X1&12, B , where

B may have values: **0 = (no control)** **1 = (control enabled)**

ADVANCE OF RIBBON BRAKE RELEASE (WITH RESPECT TO THE START OF PRINTING)

It's possible to start in saving ribbon also before printing starts (when printhead is already down or it's going down). This is possible by programming an advance for ribbon brake release. Parameter is , expressed in millimeters and it has a typical value of 4.

The higher is this parameter the bigger is the quantity of rolled ribbon.

?X1&13,X , where

X Advance millimeters for brake release before printing

USED RIBBON PHOTOSENSOR: ON / OFF

FH-C is provided with two different photosensors which look for ribbon presence.

The former is placed behind the printhead and it verifies presence of still unused ribbon: the latter is placed frontally and it verifies the presence of ribbon after printing.

It may happen that some used ribbon spot go under frontal photosensor: in this case photosensor gives an error of end of ribbon. To avoid these situations you have to disable frontal photosensor.

Next command allowss you enable or disable frontal photosensor.

?X1&14,X , where

X Parameter can value:

0 = frontal sensor OFF

1 = frontal sensor ON

TIMEOUT FOR RIBBON REWIND MOTOR

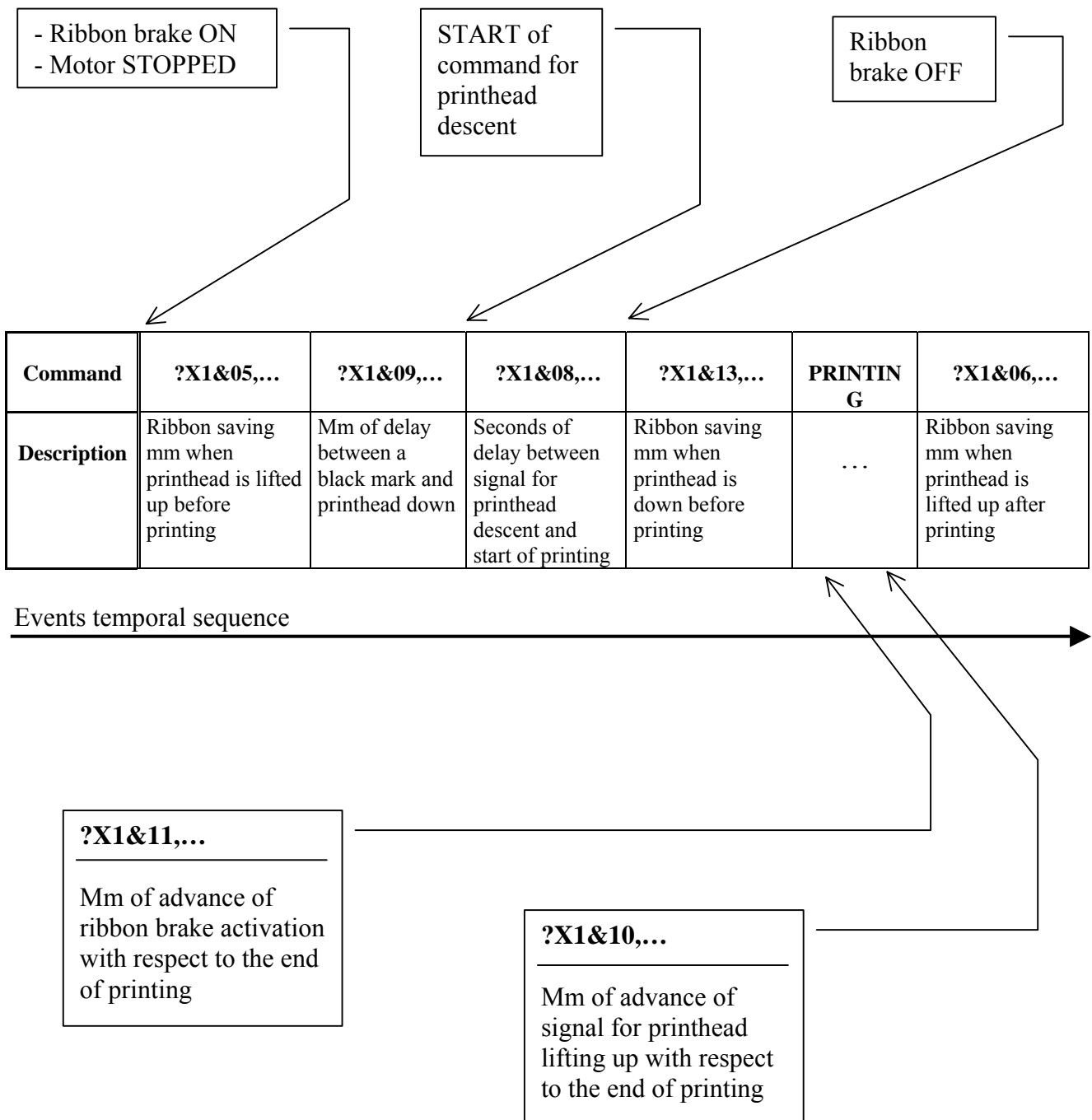
With next command you can program maximum number of seconds for ribbon rewind motor. Once this time is elapsed motor is halted. This is useful to stop and save ribbon in case of malfunctioning of system.

?X1&15,S , where

S Maximum number of seconds for ribbon rewind motor

Default factory value is S = 2

TEMPORAL SEQUENCE OF COMMANDS EVENTS



Pict. 1: FH-C working diagram

Commands for FH – I

The FH–I provides printing on intermittent motion packaging materials, such as all flexible films, labels, cartons and foils. Further details on specific user manual.

Next commands are only for FH–I.

ADVANCEMENT STARTING STEPS WITH PRINthead LIFTED UP

It's possible to make printhead to move before it goes down and begins printing. It could be useful to align printed objects correctly with the stop position of film.

Programmed value is kept into permanent memory.

Command is:

?X2&0,X , where

X Advancement steps with printhead up before start of printing

DELAY AFTER PRINthead DESCENT AND BEFORE PRINTING

It's possible to set up a delay calculated after printhead has gone down and before printing starts. This delay is useful to let mechanical movements (and also related vibrations of printhead) finish before starting printing.

A typical value for this delay is 70 milliseconds. Too short delays may cause a not perfect printing in the first printed lines.

Command is:

?X2&1,X , where

X Delay expressed in milliseconds

DELAY BEFORE RIBBON SAVING

When printing has finished, printhead is lifted up and carried back to “home position”. After this operation, but before subsequent ribbon saving, it's possible to put a delay, to let residual motor currents discharge.

A typical value for this delay is 50 milliseconds.

?X2&2,X , where

X Delay expressed in milliseconds

RIBBON FRONTAL PHOTOSENSOR: ON / OFF

FH-I is provided with two different photosensors which look for ribbon presence.

The former is placed behind the printhead and it verifies presence of still unused ribbon: the latter is placed frontally and it verifies the presence of ribbon after printing.

It may happen that some used ribbon spot go under frontal photosensor: in this case photosensor gives an error of end of ribbon. To avoid these situations you have to disable frontal photosensor.

Next command allowss you enable or disable frontal photosensor.

?X2&3,X , where

X Parameter can value:

0 = frontal sensor OFF

1 = frontal sensor ON

RIBBON SAVER– REWINDED RIBBON ROLL DIAMETER

If ribbon saver optimizer has been enabled by command ?X2&5,... real rewinded ribbon roll diameter is required to be set by command:

?X2&4,D

D diameter expressed in millimeters

RIBBON SAVER OPTIMIZER

FH-I device may run with a dynamic thermal ribbon consumption calculation and may optimize its use. This feature is enabled by command:

?X2&5,B

B **0 = Dynamic calculation OFF**

1= Dynamic calculation ON

WARNING: If this feature is enabled rewinded ribbon roll diameter must be specified too by command ?X2&4...

REALTIME COMMANDS

All next commands are Realtime commands:

- **!0**
- **!1**
- **!2**
- **!3**
- **!4**
- **!5**
- **!9**
- **!\$**
- **!***
- **!+**
- **!-**
- **^xxx (Rs485 addressing mode)**

All commands starting with exclamation mark ‘!’ are called “Realtime commands”, because they are not bufferized but they are executed as soon as received.

All Realtime commands starting by ‘!’ are done by only two ASCII characters; there is no need to terminate them by a control character.

Let’s see them in detail

PRINTER STATUS REQUEST - MODE 1

By this command it's possible to have an answer about printer status from printer serial port. The answer is done by one only byte transmitted as soon as the command is received by printer. Syntax is:

!0 (**zero, not 'O'**)

There are no parameters and the command is two bytes made. After having received this command printer will answer one of following control characters:

06 Hex	normal behaviour condition (On Line)
15 Hex	syntax error into programming commands or parity error into serial communication. To put printer on line again you have to push frontal print button
07 Hex	end of paper or end of ribbon condition
1A Hex	signal for break down of power. It is sent only at the first status request after printer power on. To enable this answer you must use the setup menu
08 Hex	printer is busy for printing

PRINTER RESTART

As soon as this command is received, the printer stops any operations and reboots as you turn it off and then turn it on.

If you have sent this command you must wait for the leds before transmitting any other command.

Syntax is:

!1

There are no parameters and the command is two bytes made.

Hereafter there are the effects of this command on printer conditions.

- **Print buffer** is completely erased
- **Print speed** is set to 90 mm/sec
- **Wide / Narrow** parameters for barcodes are set to 2 / 1
- The **barcode unit element width** is set to 2
- **Barcodes readable characters** are set to ON
- **Batch prints** are stopped
- **Protection level** is set to 0
- **Print button** is set to normal functionality
- **The serial character transmission at the end of print** is set to OFF
- **Texts alignment** is set to standard condition
- **The cutter** is disabled

PERMANENT MEMORY RESET

Printers have a permanent memory that keeps working and system informations stored even if printer is turned off. It's possible to erase all these stored data by a realtime command.
If you have sent this command you must wait for the leds before transmitting any other command.

Syntax is:

!2

There are no parameters and the command is two bytes made.

Hereafter there are the effects of this command on printer conditions.

- All those caused by “**!1**” command
- All **layouts** stored into permanent memory are erased
- The **batch print counter** is reset to 0
- The forward **feed** (advancing of paper at the end of print in continuous mode) is reset to 0
- The **gap** (advancing of label at the end of print in label mode) is reset to 0
- **Automatic balancing** of **photosensor** levels
- The **backfeed** (backward moving of label before printing) is reset to 0
- If printer is working in label mode it does a **realignment** of labels
- All **counters** (Engines and Images) and **clock fields** are reset
- The **infinite print loop**, if enabled, is interrupted

RECEIVE BUFFER ERASING

As soon as printer receives this command it erases all not still decoded characters from receive serial buffer.

Syntax is:

!3

There are no parameters and the command is two bytes made.

PRINTER STATUS REQUEST – MODE 2

This command causes printer to answer its status by the serial transmission of a character.

Syntax is:

!4

There are no parameters and the command is two bytes made.

After having received this command, the printer will answer its status by transmitting one of the following control characters on serial port:

06 Hex	OnLine. Normal status
15 Hex	OffLine. syntax error into programming commands or parity error into serial communication. To put printer on line again you have to push frontal print button
18 Hex	label taken sensor busy (only if enabled)
19 Hex	Condition of end of paper or end of thermal ribbon
1A Hex	signal for break down of power. It is sent only at the first status request after printer power on.
1B Hex	control of label taken sensor not executed
08 Hex	printer is busy for printing

PRINTER STATUS REQUEST – MODE 3

This command causes printer to answer its status by the transmission of a character to serial port. Answer, 1 byte long, takes information about printer status.

Syntax is:

!5

There are no parameters and the command is two bytes made.

The answer from printer must be interpreted in this way:

BIT0	1 = End of paper	0 = OK
BIT1	1 = End of ribbon	0 = OK
BIT2	1 = Syntax error	0 = OK
BIT3	1 = First interrogation after power on	0 = OK
BIT4	1 = Head temperature too high	0 = OK
BIT5	1 = Applicator running	0 = Applicator in standby
BIT6	1 = label taken sensor engaged	0 = Sensor not engaged
BIT7	Unused	

NOTA

BIT0 is the lowest significant bit, BIT7 is the most significant bit

BREAK OF A BATCH PRINTING

Next command will stop any running batch printing lot begun by command “?14&...” .
When printer receives this command, it will finish an eventually half printed label, and then will stop the batch queue.

Syntax is:

!9

This command is composed by two characters only.

QUIT MACRO INTERPRETER MODE

This command causes printer to stop and quit Macro Interpreter mode (see paragraph “Macro Interpreter mode”). After having executed this command, printer comes back to standard mode.

Syntax is:

!\$

There are no parameters and the command is two bytes made.

LABEL ALIGNMENT

Next command allows you to align labels, based on alignment parameter already prenet into printer's memory. No paper transparency detection is done and no memory reset procedure is executed. This command may be run when printer is in stand-by mode (printer must not be kept busy by external signals or running printing batch).

Syntax is:

!*

This command is composed by two characters only.

STOP WORKING PROCEDURE AND RECEIVED DATA ERASE

Next command allows you to stop running printer procedure and erase commands received into printer's buffer.

WARNING: Three external signals setup is reset to default configuration. To avoid signal setup reset please use !- command.

Syntax is:

!+

This command is composed by two characters only.

STOP WORKING PROCEDURE AND RECEIVED DATA ERASE

Next command allows you to stop running printer procedure and erase commands received into printer's buffer.

Syntax is:

!-

This command is composed by two characters only.
See also !+ command.

RS485 NETWORK

LOCAL ADDRESS FOR PRINTERS INTO A RS485 NET ☹

NOTE: Available only for RS485 serial port models

Next command allows you set RS485 local address of printer.

After having received this command, printer will decode commands if “awaked” with immediate command “^xxx” (see next paragraph).

Valid values for addresses are in the range 0 (zero) ... 255.

Address 0 (zero) put printer into “broadcast receiving” state; this means printer having address zero will decode commands sent to all addresses.

Factory setting for address is 0 (zero).

Syntax is:

?I0&Address

and parameter means:

Address Printer address. Correct values are in the range 0 ... 255

IMMEDIATE RECALL OF A PRINTER IN A RS485 NET

With this command you can awake a printer in a RS485 net. This means that after having received this command a printer awakes if its address matches with the one received and falls asleep if it doesn't.

In a RS485 net in which you don't use broadcast transmission there is one only awake printer at a time.

Syntax is:

^xxx

and parameter means:

xxx Recalling printer address. It must be composed by three digit and its correct values are in the range 000 ... 255.

This command belongs to *immediate* commands, that is it is executed by printer immediately after its receiving, without entering the serial queue.

Broadcast transmission

Address 000 (zero) can perform a “broadcast transmission” to all printers at a time.

Esempio

...

^025 Recall of printer n° 25; since this moment only printer 25 will decode transmitted commands

...

SERIAL COMMUNICATIONS

italora printers can manage two well known serial communication protocols:

- Software protocol XON / XOFF
- Hardware protocol RTS / CTS

SOFTWARE PROTOCOL “XON / XOFF”

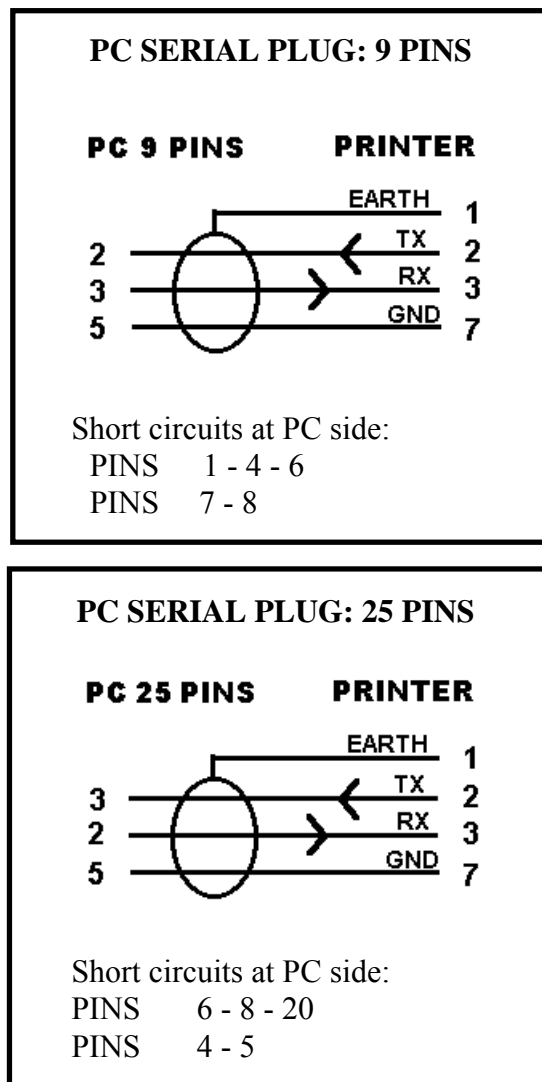
When the print serial buffer is filled more than 3/4, one control character XOFF (ASCII code 13 Hex) is sent out by printer on serial line.

Host computer that is sending data to printer must break transmission at this point and wait.

When commands stored into serial buffer are processed that is while serial buffer is emptying itself, printer sends out on serial line one control character XON (ASCII code 11 Hex) to signal the new disposability to receive data.

Host computer at this point can restart to transmit commands.

Hereafter is drawn the sketch of serial cables to use the software protocol:



Pict. 2: Sketch of serial cables to use the software protocol XON/XOFF

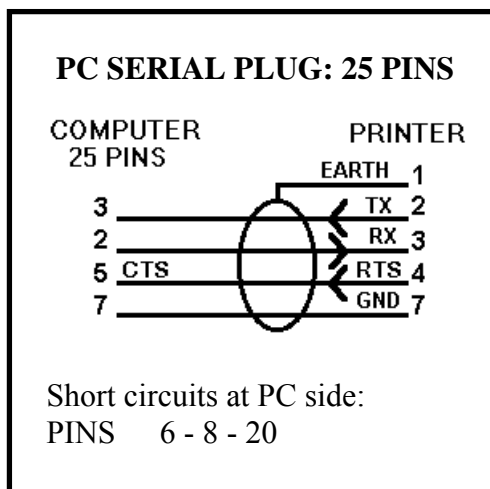
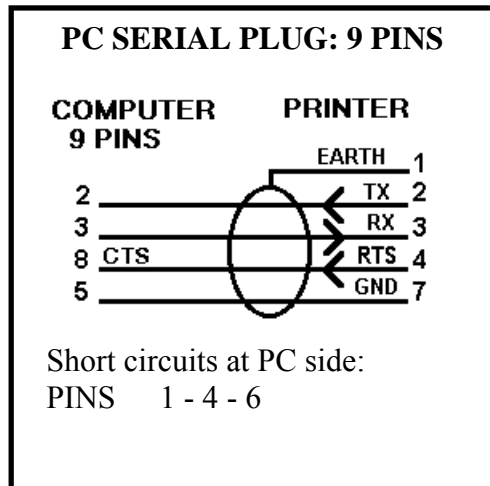
HARDWARE PROTOCOL “RTS / CTS”

If you want to use this kind of protocol you only must use the correct cable: no software implementation is requested.

Obviously the external device serial port must be able to manage the hardware lines RTS / CTS.

The host application has to do no software control of printer status before sending data, because all controls are done by hardware circuits of serial port.

Hereafter is drawn the sketch of serial cables to use the hardware protocol:



Pict. 3: Sketch of serial cables to use the hardware protocol RTS/CTS

APPENDIX 'A' – INTERNAL AVAILABLE CHARACTERS

FIRST	2	3	4	5	6	7	8	9	A
SECOND									
0		0	@	P	`	p	€	É	á
1	!	1	A	Q	a	q	ü	æ	í
2	"	2	B	R	b	r	é	Æ	ó
3	#	3	C	S	c	s	â	ô	ú
4	\$	4	D	T	d	t	ä	ö	ñ
5	%	5	E	U	e	u	à	ò	Ñ
6	&	6	F	V	f	v	å	û	^a ø
7	'	7	G	W	g	w	ç	ù	°
8	(	8	H	X	h	x	ê	ÿ	*
9	)	9	I	Y	i	y	ë	Ö	*
A	*	:	J	Z	j	z	è	Ü	*
B	+	;	K	[	k	{	ï	ç	*
C	,	<	L	\	l	¡	î	£	*
D	-	=	M	]	m	}	ì	Ø	*
E	.	>	N	^	n	~	Ä	ß	*
F	/	?	O	_	o	φ	Å	§	*

NOTE:

The character having ASCII code = A6 Hexadecimal (166 Decimal) is not the same for all internal font. In particular:

- for font “NewCent” the character is: ‘ a ’
- for all other fonts the character is: ‘ ø ’

NATIONAL CHARACTERS SET

It's possible to choose the national characters set to use and print.

Hereafter there is the table containing all the differences between sets

Hex Code	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
Country												
Italy	#	\$	@	[	\	\]	^	`	{	|	}	~
USA	#	\$	@	[	\	\]	^	`	{	|	}	~
Sveden	#	Ø	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Norvay	#	Ø	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
France	#	\$	à	°	ç	§	^	`	é	ù	è	“
Germany	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
UK	£	\$	@	[	\	\]	^	`	{	|	}	~

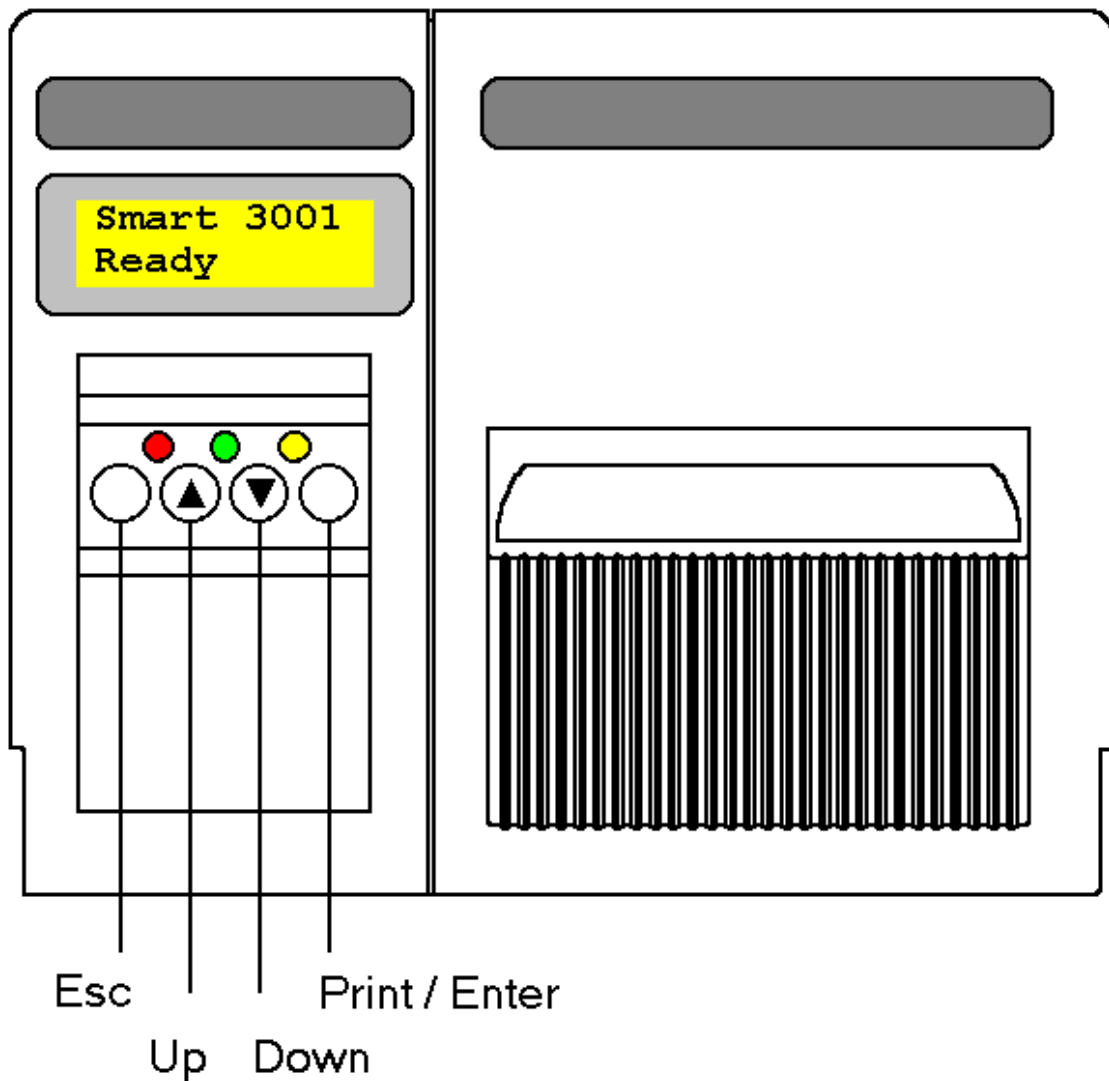
APPENDIX 'B' – Printers with display

MONOCHROME DISPLAY + 4-KEY KEYBOARD

NOTE:

This appendix refers only to models of printers provided with display and 4 keys membrane

The display and the 4-keys keyboard let you make all settings and regulations for a correct work. Here below there is the drawing of the frontal panel of a printer provided with display.



Pict. 4: Smart 3001 frontal panel and keyboard

KEYS AND LIGHTS DESCRIPTION

As you can see into the above drawing, on the frontal panel of printer there are three lights (leds) and four keys.

See paragraph “Frontal lights” for a complete explication of meaning of leds.

The keys on printer frontal panel are the following:

- ESC
- UP ARROW
- DOWN ARROW
- PRINT / ENTER

and hereafter we explain them all.

ESC KEY

When it is pressed alone it can be used in the next ways:

1. after syntax errors during a programming phase to restore the “on line” normal condition
2. to break a batch print
3. to quit the setup menu and return to main menu
4. to quit the RamCard mode
5. to quit the Data Dump mode

UP ARROW KEY

When it is pressed alone it can be used in the next ways:

1. to increase the print contrast during the “on line” status
2. to scroll up the voices into the setup menu
3. to scroll up the voices into the RamCard mode
4. if pressed at power on it starts the Data Dump mode

DOWN ARROW KEY

When it is pressed alone it can be used in the next ways:

1. to decrease the print contrast during the “on line” status
2. to scroll down the voices into the setup menu
3. to scroll down the voices into the RamCard mode

PRINT KEY

When it is pressed alone it can be used in the next ways:

1. to print the last composed label
2. to restore the “on line” normal condition after end of paper or end of ribbon
3. as a confirmation of selection done into the setup menu
4. as a confirmation of selection done into the RamCard mode
5. to print the data received from the serial or parallel port during Data Dump mode
6. if pressed at power on it causes the realignment of labels; during this procedure, called “pressed key boot”, the printer reads the values of transparence of labels and silicon support and besides it reads the lenghts of used labels

ESC + UP ARROW KEYS

These two keys, if pressed contemporary during the normal “on line” mode, make printer to enter the RamCard mode, in which printer can read previously stored labels from that memory device.

ESC + DOWN ARROW KEYS

These two keys, if pressed contemporary during the normal “on line” mode, make printer to enter the setup mode.

KEYS SUMMARY TABLES

	POWER ON	ON LINE STATUS	SETUP MODE	PAPER END / RIBBON END
ESC		Abort / Quit	Abort / Quit	
UP Arrow	Data Dump	Contrast +	Scroll UP / +	
DOWN Arrow		Contrast –	Scroll DOWN / –	
PRINT	Realignment	Print	Confirmation	Restore
ESC + UP		RamCard mode		
ESC + DOWN	Setup mode	Setup mode		
ESC + PRINT		Layout activating		

	SYNTAX ERROR	BATCH PRINT	RAMCARD MODE	DATA DUMP
ESC	Restore	Stop of print	Abort / Quit	Abort / Quit
UP Arrow			Scroll UP	
DOWN Arrow			Scroll DOWN	
PRINT			Select	Print
ESC + UP				
ESC + DOWN				
ESC + PRINT				

MAIN SETUP MENU

If you press contemporary ESC and DOWN Arrow keys printer enters the Main Setup Menu. In it you can set up the next parameters:

- BAUD, Parity, Data bit, Stop bit of serial port
- Writing mode: “Direct Thermal” or “Thermal Transfer”
- Printing media: Labels, Continuous paper or Tags
- Label taken photosensor: ON / OFF
- Print of preprinted labels: YES / NO
- Y Aligement (Gap at the end of print in label mode)
- Transmission of character SUB (1A Hex = 26 Dec) at the first status request: ON / OFF
- Macro Interpreter mode: ON / OFF
- Output Print End signal: Enabled / Disabled
- Input Print Consent Signal: Enabled / Disabled
- Parallel mode: Standard / Mainframe. If you choose the Mainframe mode all input control character (those with ASCII code lesser than 32 Dec) are transformed into Carriage Return character, having ASCII code 13 Dec
- National characters set selection (see Appendix ‘A’)

8-COLOR DISPLAY + 10-KEY KEYBOARD

NOTE:

This section refers only to Printer models (with display) belonging to the Electronic-7 family.

KEYBOARD

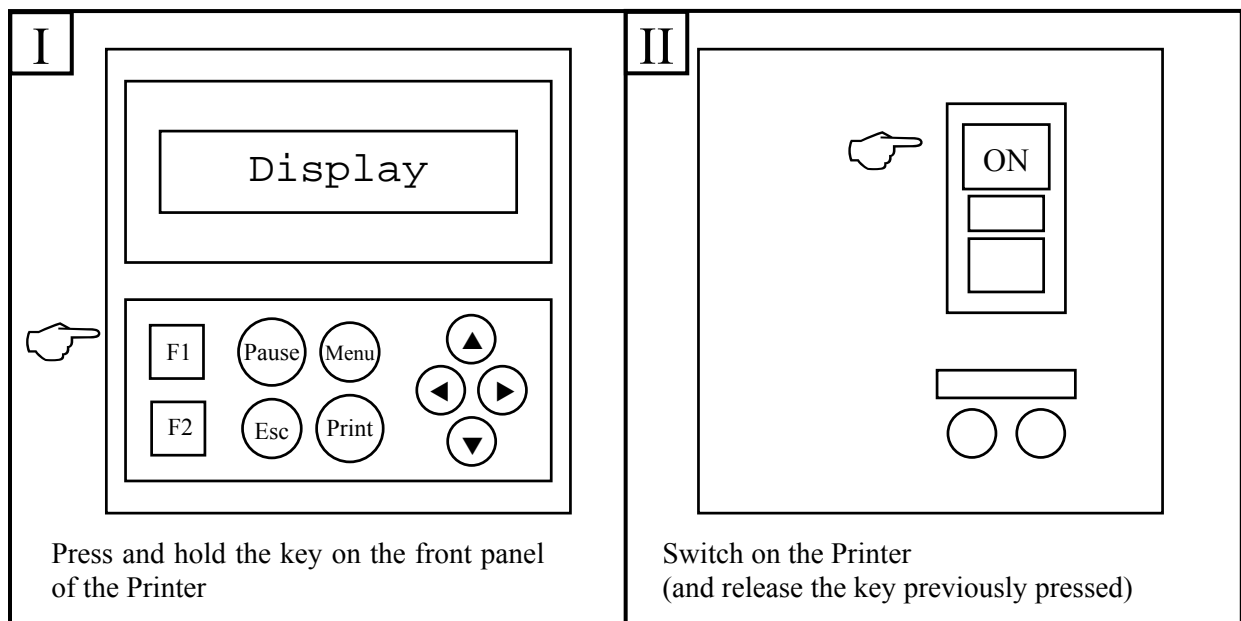
The Printer behaviour in response to the keyboard use depends on the current status of the Printer itself.

POWER-ON

Features available at Printer Switching-ON.

NB: hold down corresponding key while switching on the Printer.

(release the key only after the activation of the desired function)



- "Power-ON" keypress procedure -
(I = Printer front , II = Printer back)

- Print/OK
 - Run the Printer "Initializing Procedure"
- Menu
 - Access the Printer "Setup Menu" before it reaches the Standard operating mode
- UP Arrow
 - Run the "DUMP Mode" of receiving data

STANDARD OPERATING MODE (READY / DATA RECEIVING)

Features available when the Printer is in Standard operating mode ("Ready").

(Printer Name)
Ready!

- "Ready" Display message -

- Print/OK
 - Print of the content of the Print Buffer (repeat the last label printed)
If the Print Buffer is empty (condition that occurs at Printer Switching-ON or after performing a "Reset Procedure"), the Printer will print the "Test Label", that lists the main Printer's current operating settings
- UP Arrow
 - Increase the energy percentage supplied to the Print-Head (0 - 150 %), accordingly increasing the Print Contrast
- DOWN Arrow
 - Decrease the energy percentage supplied to the Print-Head (150 - 0 %), accordingly decreasing the Print Contrast

WARNING:

a too high percentage may seriously damage the Print-Head or however reduce its life!!

- Menu
 - Access the Printer "Setup Menu"
(refer to "Setup Menu" paragraph)
- F1
 - Access the "Label Layout Selection" section
(refer to "Label Layout Selection (A - Z)" paragraph)
- Pause
 - Enable/Disable the execution of the "Apply Equipment Cycle" stored in Printer memory
(available only on models with Apply Equipment / "OEM Expansion Board")
- "UP Arrow + DOWN Arrow" (simultaneous pressure)
 - Run the Printer "Reset Procedure"

Setup Menu

Features available in the Printer "Setup Menu".

- RIGHT/LEFT Arrows
 - Scroll Menu and Submenus Items
- UP/DOWN Arrows
 - Scroll available Options for each Item in Menu and Submenus
 - Increase/Decrease numeric fields in the Options
- Print/OK
 - Store the displayed Option
 - Access Submenus (when the message "OK to Enter" is shown)
 - Run the displayed procedure (when the message "OK to START!" is shown)
- Esc
 - Exit Submenus and return to the previous Menu/Submenu
 - Exit Menu and return to the "Ready" operating condition

WARNING: to really change the value of any option, the "Print/OK" key should be pressed!!
Transferring to another Item ("RIGHT/LEFT Arrows") or exiting the Submenu/Menu ("ESC" key) without pressing the "Print/OK" key will NOT STORE the setting of the option previously displayed!!

In this case, the settings of the last properly performed storing operation will be kept as valid.
Each press of the "Print/OK" key stores the value of the currently displayed option.

Label Layout Selection (A - Z)

Features available in the "Label Layout Selection" section.

- RIGHT/LEFT Arrows
 - Scroll "Label Layouts" ('A' to 'Z')
- UP/DOWN Arrows
 - Scroll available Options ("Set as Default" or "Erase!")
- Print/OK
 - Perform the Option displayed
- Esc
 - Exit the section and return to the "Ready" operating condition

SPECIAL COMBOS

The special combos are keys combinations (starting from "Ready" operating condition) that should be used to access some special features.

Debug Menu

This combo give access to the "Debug Menu", feature that allows to analyze the internal settings of the Printer and (eventually) the external interfacing signals.

"Ready" condition

↳ "Menu"

↳ "F1"

↳ "Print/OK" → access the "Debug Menu"

↳ "Esc" → return to "Ready"

Available features inside the "Debug Menu" of the Printer:

- RIGHT/LEFT Arrows
 - Scroll Menu and Submenus Items

- UP/DOWN Arrows
 - Scroll available Options for "Output Commands" ("ON" or "OFF")
(feature available on "OEM" models only)

- Pause
 - Suspend/Resume reading "Internal Sensors"
 - Suspend/Resume reading "Input Signals"
(feature available on "OEM" models only)

- Print/OK
 - Access Submenus (when the message "OK to Enter" is shown)
 - Run the displayed procedure (when th messages "OK to START!" or "OK to PRINT!" are shown)
 - Resume reading "Internal Sensors" from Pause condition
 - Resume reading "Input Signals" from Pause condition
(feature available on "OEM" models only)
 - Perform the selected Option for "Output Commands"
(feature available on "OEM" models only)

- Esc
 - Exit Submenus and return to the previous Menu/Submenu
 - Exit the Menu and return to the "Ready" operating condition

RAM Memory Backup

This combo give access to the "RAM Memory Backup" section, feature that allows to activate the auto-backup of Printer settings (every time they change) from RAM memory to FLASH memory.

"Ready" condition

↳ "Menu"

↳ "F2"

↳ "Print/OK" → access the "RAM Memory Backup" section

↳ "Esc" → return to "Ready"

Available features inside the "RAM Memory Backup" section:

- UP/DOWN Arrows
 - Scroll available Options ("Enabled" or "Disabled")
- Print/OK
 - Select the displayed Option
- Esc
 - Exit the section and return to the "Ready" operating condition

BATCH PRINT MODE

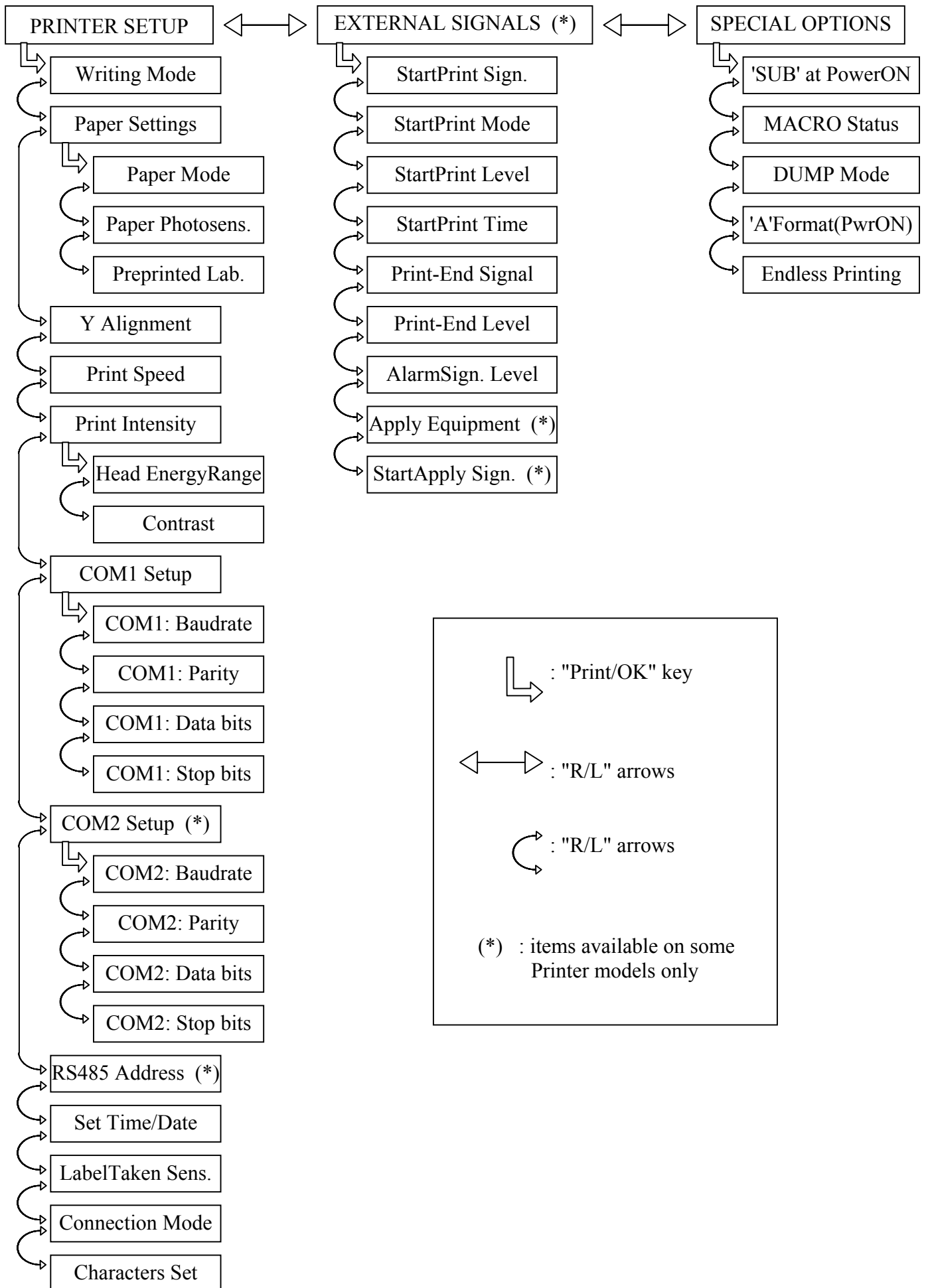
Features available with Printer in "Batch Print" operating mode.

Batch Copies:
(x) of (N)

- "Batch Print" Display message -

- Pause
 - Suspend/Resume the current Print Cycle
- Print/OK
 - Resume the current Print Cycle from Pause condition
- Esc
 - Quit the current Print Cycle and return to "Stand By" operating condition

SETUP MENU



The "Setup Menu" allows to manage Printer operating general settings and parameters.

Available settings are divided into the following Submenus:

- **PRINTER SETUP**
Printer operating parameters
- **EXTERNAL SIGNALS** (available on "OEM" models only)
External Signals management
- **SPECIAL OPTIONS**
special Printer operating modes

PRINTER SETUP

"Printer Setup" Submenu contains the following Items:

- Writing Mode
Printing method:
 - Direct Thermal: directly on thermo-sensitive media
 - Thermal Transfer: through inked ribbon transfer
- Paper Settings
Print Media management:
 - Paper Mode
Print Media typology:
 - Labels: stickers/adhesive labels
 - Continuous: continuous media without marking signs
 - Tag/Tickets: media with marking signs or holes
 - Paper Photosens.
Print Media photosensor typology:
 - Fork
 - Reflection
 - Preprinted Lab.
setting to use pre-printed labels
- Y Alignment
Set the alignment "Gap" at printing end
- Print Speed
Set the Printer printing speed
- Print Intensity
Print Intensity adjusting:
 - Head EnergyRange
limitation of the energy supplied to the Print-Head:
 - Standard (Low): limitation enabled, operating in "Low Energy" range
 - High Energy: limitation disabled, operating in "High Energy" range
 - Contrast
percentage of energy supplied to the Print-Head (Print Contrast)
- COM1 Setup
Serial communication settings for "COM1" Port
 - COM1: BAUDRATE
 - COM1: PARITY
 - COM1: DATA bits
 - COM1: STOP bits
- COM2 Setup (available on "two-RS232 COM Port" models only)
Serial communication settings for "COM2" Port
 - COM2: BAUDRATE
 - COM2: PARITY

- COM2: DATA bits
- COM2: STOP bits
- RS485 Address (available on "RS485" models only)
Printer address for communication on "RS485" protocol
- Set Time/Date
Internal Time/Date settings
- LabelTaken Sens.
Use/Presence of Label-Taken Sensor
- Connection Mode
Control Characters receiving mode
 - Standard: received characters are not modified
 - Mainframe: conversion of all Control Characters received in the "Carriage Return" character (CR, ASCII code = 13)
- Characters Set
Alphabetical Characters Set selection

EXTERNAL SIGNALS (AVAILABLE ON "OEM" MODELS ONLY)

"External Signals" Submenu contains the following Items:

- StartPrint Sign.
Enable/Disable Start-Print Signal
- StartPrint Mode
Start-Print Signal operating mode selection
- StartPrint Level
Set the Start-Print Signal logic level of activation
- StartPrint Time
Set the Start-Print Signal minimum period
- Print-End Signal
Print-End Signal operating mode selection
- Print-End Level
Set the Print-End Signal logic level of activation
- AlarmSign. Level
Set the Alarm Signal / Auxiliary Out logic level of activation
- Apply Equipment (available on "OEM" and "OEM Expansion Board" models only)
Enable/Disable the execution of the "Apply Equipment Cycle"
- StartApply Sign. (available on "OEM" and "OEM Expansion Board" models only)
Enable/Disable Start-Apply Signal

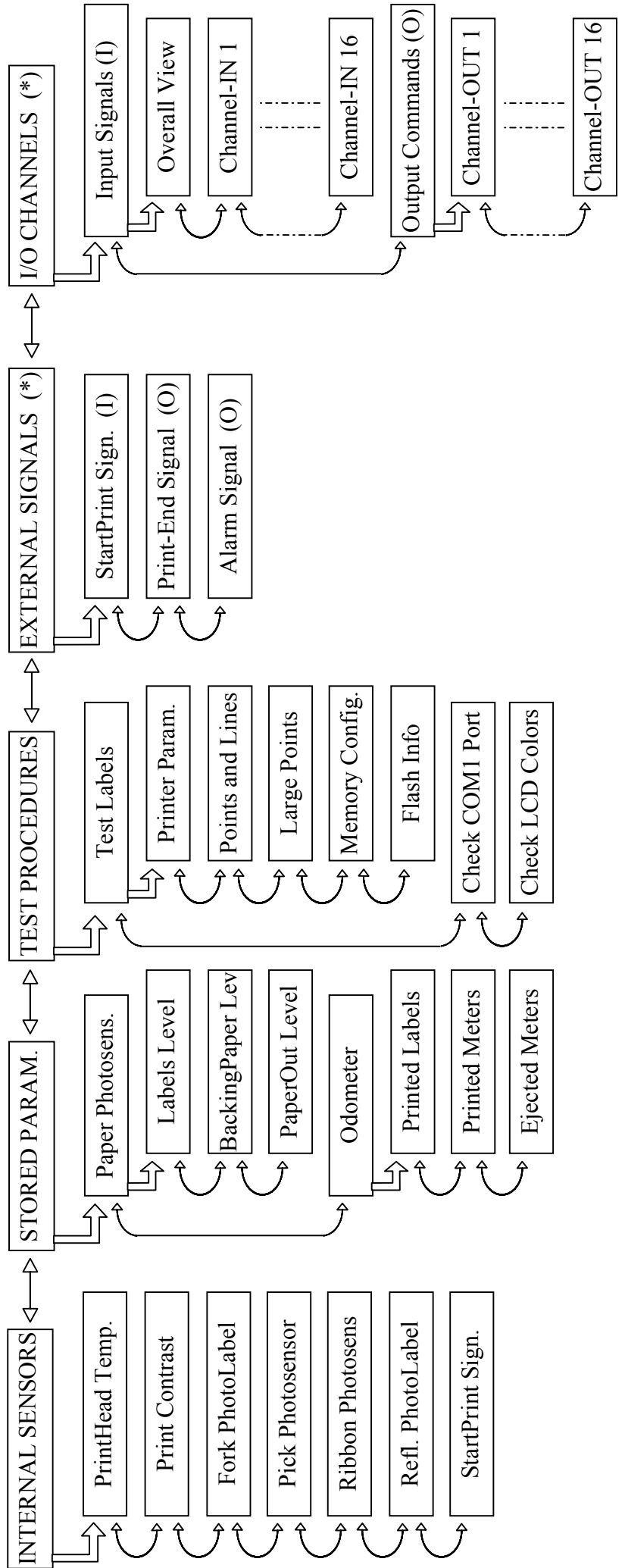
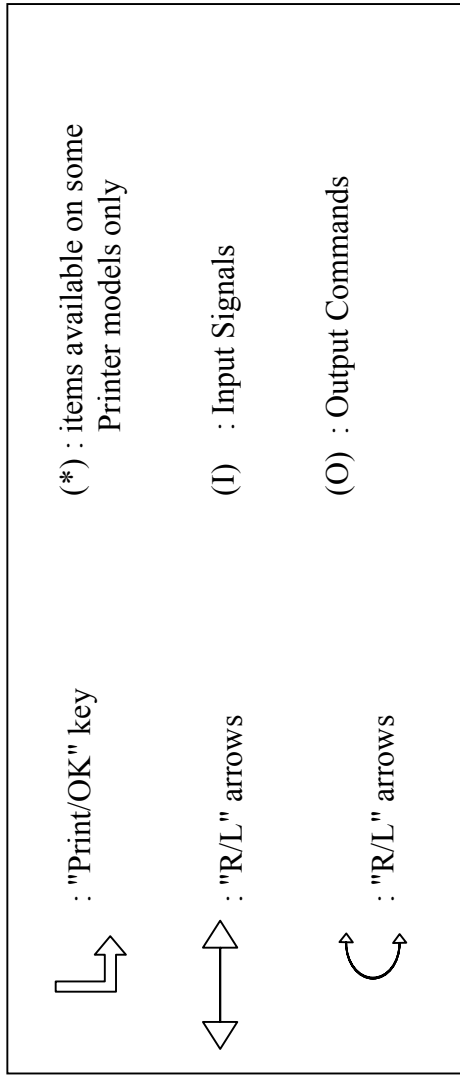
SPECIAL OPTIONS

"Special Options" Submenu contains the following Items:

- 'SUB' at PowerON
Send of "SUB" character (by the Printer) every time the power is restored (eg: at Power-ON or in case of voltage drops)
- MACRO Status
"Macro Interpreter" operating mode:
the Printer automatically composes the labels with data directly received from the device to which it is connected (eg: an electronic balance)
- DUMP Mode
"DUMP" operating mode:
the Printer decodes all the received characters and prints them as a sequence of single values depending on the set code (hexadecimal, decimal or ASCII)
- 'A'Format(PwrON)
Management of the "Label 'A' Format" auto-activation at Power-ON
- Endless Printing

Endless Printing operating mode:
continuous printing of data contained in the Print Buffer

DEBUG MENU



The "Debug Menu" allows to monitor and analyze Printer settings and (eventually) the external interfacing signals, in order to identify and solve any faults or malfunctioning.

Available settings are divided into the following Submenus:

- **INTERNAL SENSORS**
Printer Internal Sensors interrogation
- **STORED PARAM.**
displaying of parameters related to Print Media transparencies and made/performed Prints
- **TEST PROCEDURES**
procedures to test some Printer features
- **EXTERNAL SIGNALS** (available on "OEM" models only)
External Control Signal analysis
- **I/O CHANNELS** (available on "OEM" and "OEM Expansion Board" models only)
Input Signals and Output Commands analysis

INTERNAL SENSORS

- PrintHead Temp.: Print-Head temperature
- Print Contrast: Print Contrast percentage
- Fork PhotoLabel: value read from Print Media Photosensor (Fork type)
- Pick Photosensor: value read from Label-Taken Photosensor
- Ribbon Photosens: value read from Inked Ribbon Photosensor
- Refl. Photolabel: value read from Print Media Photosensor (Reflection type)
- StartPrint Sign.: Start-Print Signal value

STORED PARAM.

- Paper Photosens.
Print Media transparencies, stored during the last alignment procedure:
 - Labels Level: boundary value of labels detection
 - BackingPaper Lev: boundary value of backing-paper detection
 - PaperOut Level: boundary value of End-Media detection
- Odometer
parameters related to made/performed Prints:
 - Printed Labels: number of printed labels
 - Printed Meters: amount of printed Print Media
 - Ejected Meters: amount of ejected Print Media

TEST PROCEDURES

- Test Labels
print of Test/Check Labels:
 - Printer Param.: Printer operating settings (also called "Printer Test Label")
 - Points and Lines: Print-Head dots integrity check pattern
 - Large Points: Print-Head dots integrity check pattern
 - Memory Config.: Printer's memories settings
 - Flash Info: Printer's Flash Memory settings
- Check COM Port
serial communication check procedure (available for "COM1" Port only)
- Check LCD Colors
8-color LCD Display check procedure

EXTERNAL SIGNALS (AVAILABLE ON "OEM" MODELS ONLY)

- StartPrint Sign.: Start-Print Signal status

- Print-End Signal: Print-End Signal management
- Alarm Signal: Alarm Signal / Auxiliary Out management

I/O CHANNELS (AVAILABLE ON “***OEM***” AND “***OEM EXPANSION BOARD***”)

- Input Signals
reading of the 16 Input Signals ("Channel-IN")
- Output Commands
management of the 16 Output Commands ("Channel-OUT")

MEANING OF THE DISPLAY COLOURS

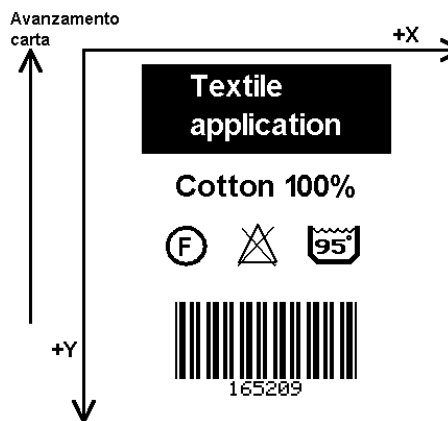
The Printer display can use different background colours. The meaning of these colours is the following:

- White:
 - "Ready" operating condition
- Red:
 - Error/Alarm condition due to factors external to the Printer (need for direct Operator intervention to identify and solve the problem)
- Yellow:
 - Error/Alarm condition due to critical operating conditions internal to the Printer (Printer resumes when operating conditions go back to the optimal ones)
- Light-Blue:
 - browsing the Printer "Setup Menu"
 - browsing the "Label Layout Selection" section
 - browsing the "RAM Memory Backup" section
- Pink:
 - browsing the "Debug Menu"
- Blue:
 - Printer busy/engaged in internal procedures
 - Pause status during "Batch Print Mode"
 - Pause status while reading "Internal Sensors" (Debug mode)
 - Pause status while reading "Input Signals" (Debug mode)
(available on "OEM" models only)
- Green:
 - "Ready" operating condition when the execution of the "Apply Equipment Cycle" is enabled.
(available on "OEM" and "OEM Expansion Board" models only)
- Yellow/Green blinking:
 - need for Operator intervention to restart Printer (when the message "Turn OFF/ON to do" is shown)

Example 2

?00&
?07&80
?06&-13
?17&232,159;0000FF8
?17&;000FFFE
?17&;003FFFF8
?17&;007FFFFC
?17&;01FF00FF
?17&;01F0001F8
?17&;07E0000FC
?17&;0FC00007E
?17&;1F800003F
?17&;1E000001F
?17&;3E000000F8
?17&;3C07FF0078
?17&;7807FF003C
?17&;7807FF003E
?17&;780700001E
?17&;F00700001E
?17&;F00700001E
?17&;F00700001E
?17&;F007FE001F
?17&;F007FE000F
?17&;F007FE000F
?17&;F00700001E
?17&;F00700001E
?17&;F00700001E
?17&;700700001E
?17&;780700003E
?17&;780700003C
?17&;3C0700007C
?17&;3E070000F8
?17&;3F000001F8
?17&;1F000003F
?17&;0FC00003E
?17&;07F0001FC
?17&;03F8003F8
?17&;01FFC7FF8
?17&;00FFFFFE
?17&;003FFFF8
?17&;0007FFC
?17&;000038
?17&;
?17&.

?17&368,159;F80000000007C
?17&;F80000000007C
?17&;FE060C0C0C1FC
?17&;FE0E0E1C1C3FC
?17&;FB1F9F3F3E77C
?17&;F9F1F3F3F3E7C
?17&;F8E0E0E0E1C7C



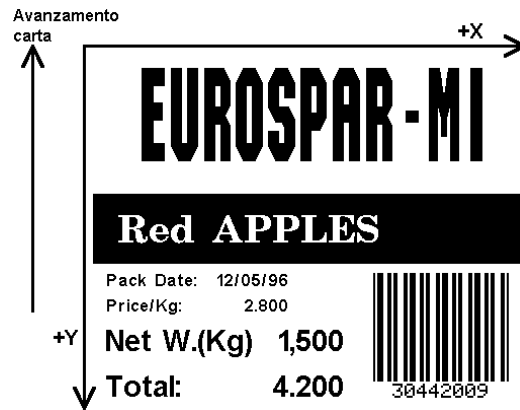
?17&;F80000000007C
?17&;F80000000007C
?17&;F80000000387C
?17&;F800000007C7C
?17&;F800000006C7C
?17&;F800000007C7C
?17&;F83FC1FFF387C
?17&;F8FFF1FFF007C
?17&;F9F0F9E00007C
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?17&;F9E079FF8007C
?17&;F9F0F9FFE007C
?17&;F8FFF801F007C
?17&;F83FF800F007C
?17&;F800F800F007C
?17&;F800F800F007C
?17&;F801F1E0F007C
?17&;F803E1F1F007C
?17&;F87FC0FFE007C
?17&;F87F003F8007C
?17&;FC00000000FC
?17&;FE00000001FC
?17&;7F00000003F8
?17&;3F800000007F
?17&;1FC0000000FE
?17&;0FFFFFFFFFC
?17&;07FFFFFFFFF8
?17&;03FFFFFFFFF
?17&;01FFFFFFFFFE
?17&;00FFFFFFFFFC
?17&.

?17&300,156;
?17&;000018
?17&;00001C
?17&;00003C
?17&;00003E003
?17&;040076006
?17&;06006700C
?17&;0300E3018
?17&;0180C383
?17&;00C1C186
?17&;004181C4
?17&;006380CC
?17&;003300F8
?17&;001F007
?17&;000E007
?17&;000E00F
?17&;000F01B8
?17&;001D8318
?17&;0018C61C
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?17&;00703006
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?17&;01830181C
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?17&;030C00C0E
?17&;071800606
?17&;063000307
?17&;0E6000183
?17&;0CC0000C38
?17&;1D80000618
?17&;190000031C
?17&;3B0000018C
?17&;360000008E
?17&;7FFFFFFFEE
?17&;7FFFFFFFFC
?17&;300000003
?17&;600000001C
?17&;4000000008
?17&;
?17&.
?09&2
?10&1
?11&2
?13&2
?52&11,241,232,0,90;165209
?52&10,242,105,2,11;Cotton 100%
?52&10,256,9,2,11;Textile
?52&10,256,46,2,11;application
?22&208,0,240,90,2
?14&1

Example 3

?00&
?07&80
?06&-13
?04&A
?53&A,0,10,49,161,13,11
?53&A,1,10,174,251,7,11
?53&A,2,10,208,279,2,11
?53&A,3,10,202,324,2,11
?09&2
?10&1
?11&2
?13&2
?53&A,4,11,301,228,5,123
?72&A,5,1,147,226,7,11,0;12/05/96
?72&A,6,1,60,21,4,12,1;EUROSPAR-MI
?72&A,7,1,37,279,2,11,2;Net W.(Kg)
?72&A,8,1,37,251,7,11,3;Price/Kg:
?72&A,9,1,37,226,7,11,4;Pack Date:
?72&A,10,1,37,324,2,11,5;Total:
?05&A
?22&24,150,424,69,1
?25&Red APPLES
?25&2.800
?25&1,500
?25&4.200
?25&3044200

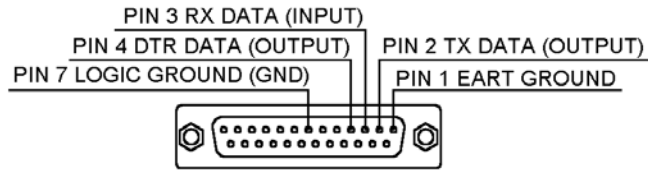


APPENDIX 'D' – SERIAL INTERFACING

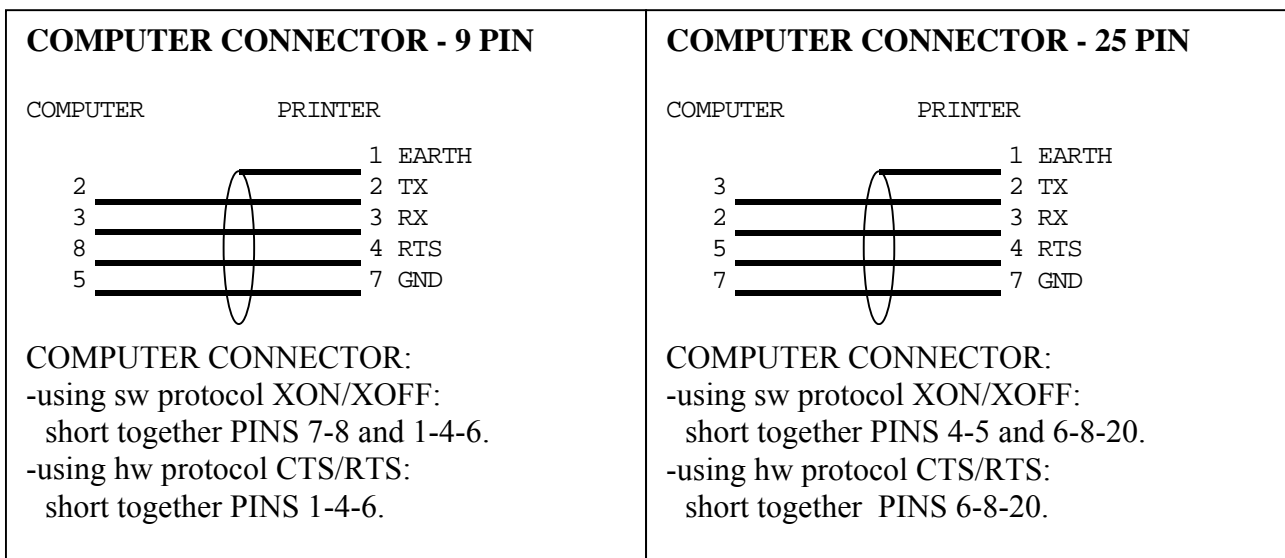
Printers model equipped with serial port have a 25 or 9 pins “DB” female connector; this connector may have different pinouts based on printer’s serial port type (Rs232, Rs422 or Rs485).

Rs232 – DB25 CONNECTOR

Connector pinout is



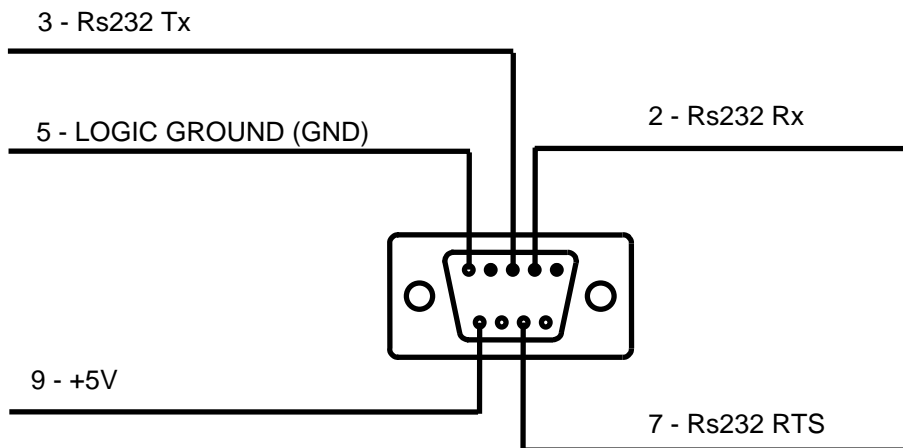
Connection to personal computer may be done in different ways:



Pict. 5: Sketch of serial cables for Rs232-DB25

Rs232 – DB9 CONNECTOR

Connector pinout is



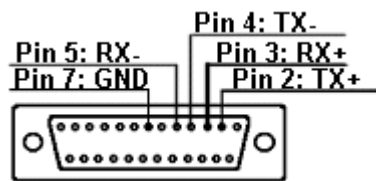
Connection to personal computer may be done in different ways:

COMPUTER CONNECTOR - 9 PIN		COMPUTER CONNECTOR - 25 PIN	
COMPUTER	PRINTER	COMPUTER	PRINTER
2	3 TX	3	3 TX
3	2 RX	2	2 RX
8	7 RTS	5	7 RTS
5	5 GND	7	5 GND
COMPUTER CONNECTOR: -using sw protocol XON/XOFF: short together PINS 7-8 and 1-4-6. -using hw protocol CTS/RTS: short together PINS 1-4-6.		COMPUTER CONNECTOR: -using sw protocol XON/XOFF: short together PINS 4-5 and 6-8-20. -using hw protocol CTS/RTS: short together PINS 6-8-20.	

Pict. 6: Sketch of serial cables for Rs232-DB9

Rs422 – DB25 CONNECTOR

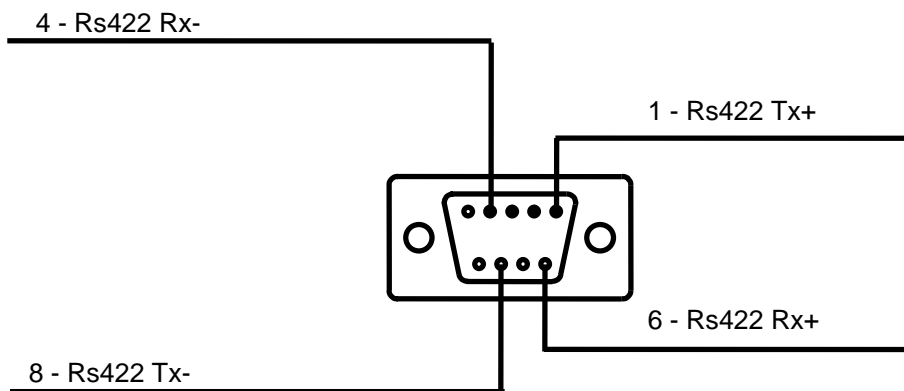
Connector pinout is



Pict. 7: Sketch of serial cables for Rs422-DB25

Rs422 – DB9 CONNECTOR

Connector pinout is



Pict. 8: Sketch of serial cables for Rs422-DB9

HANDSHAKE PROTOCOL

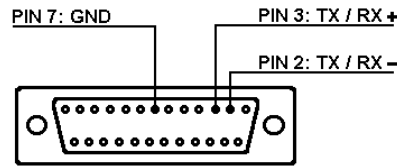
Rs422 serial line has no handshake protocol.

It means that if you transmit more than 2 / 3 KBytes of data at a time it's strongly recommended to insert a short delay (1 or 2 msec) between transmission of each character, in order to avoid printer errors during data receiving; alternatively software XON / XOFF handshake mode may be used.

Connection to personal computer may be done in different ways based on used converter.

Rs485 – DB25 CONNECTOR

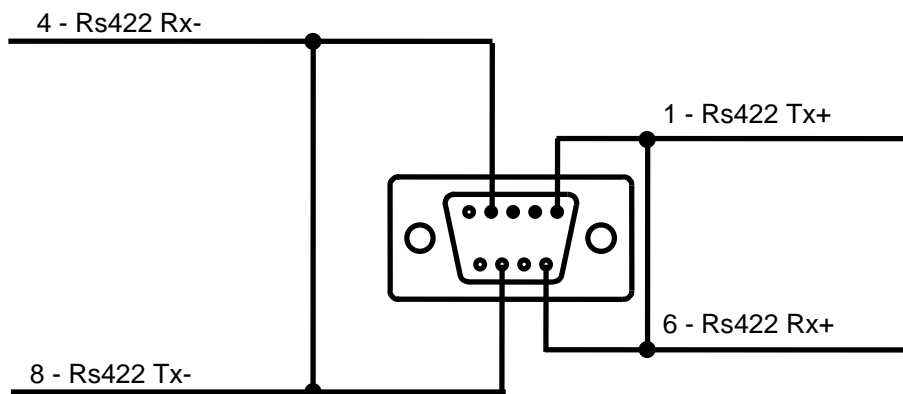
Connector pinout is



Pict. 9: Sketch of serial cables for Rs485-DB25

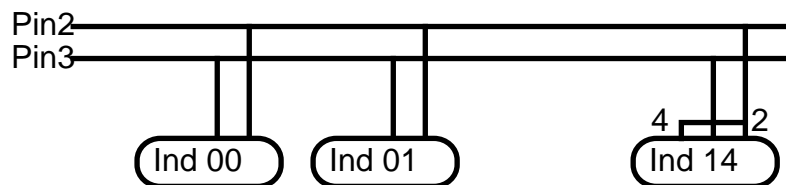
Rs485 – DB9 CONNECTOR

Connector pinout is



Pict. 10: Sketch of serial cables for Rs485-DB9

Maybe you'll need to do a short circuit between pins 2 and 4 on printer side connector, in order to enable the line terminator resistance (already included on the cpu board).



HANDSHAKE PROTOCOL

RS 485 serial line has no handshake protocol.

In fact CTS printer signal, normally used in RS232 serial line to stop data transmission, is used here to set up the direction of data stream.

It means that if you transmit more than 2 / 3 KBytes of data at a time it's strongly recommended to insert a short delay (1 or 2 msec) between transmission of each character, in order to avoid printer errors during data receiving.

Connection to personal computer may be done in different ways based on used converter.

APPENDIX 'E' – EXTERNAL SIGNALS WIRING DIAGRAM

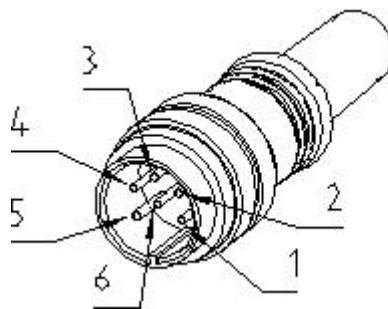
Wiring for I/O signals 6 poles DIN connector

Pick & Place working mode allows an external device (i.e. PLC, photocell, pneumatic applicator, etc...) to start or halt printing.

When Pick & Place options is enabled 3 optoisolated signals are available:

START PRINT	Input – print consent
PRINT END	Output – print end signal
ALARM	Output – auxiliary output for error conditions

These 3 signals are mapped on a 6 poles DIN tap.
DIN plug has following outline:



External view

Pict. 11: External signals connectors pinout

Wiring for I/O signals 3,4 and 5 poles connectors

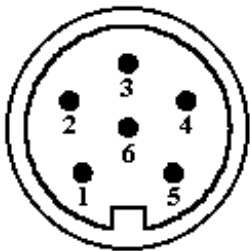
Pick & Place working mode allows an external device (i.e. PLC, photocell, pneumatic applicator, etc...) to start or halt printing.

When Pick & Place options is enabled 3 optoisolated signals are available:

START PRINT	Input – print consent
PRINT END	Output – print end signal
ALARM	Output – auxiliary output for error conditions

Devices with I/O expanded control unit, internele +24V supply and ground have these 3 signals mapped, besides on a 6 poles female connector, also on a 3,4 and 5 poles male connector .
See details ahead in these pages.

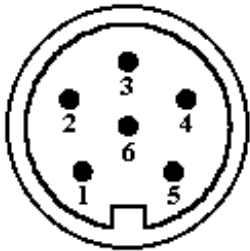
Pin out for Electronic Unit without expansion board - External power supply and ground



- | | |
|----|-----------------------|
| 1) | + START PRINT (INPUT) |
| 2) | - START PRINT (INPUT) |
| 3) | + ALARM (OUTPUT) |
| 4) | - ALARM (OUTPUT) |
| 5) | + PRINT END (OUTPUT) |
| 6) | - PRINT END (OUTPUT) |

DIN plug
Internal view, soldering side

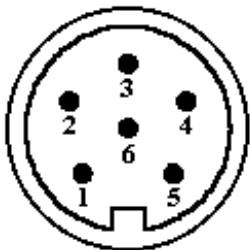
PIN OUT FOR ELECTRONIC UNIT WITHOUT EXPANSION BOARD - INTERNAL POWER SUPPLY AND GROUND



- | | |
|----|-----------------------|
| 1) | + START PRINT (INPUT) |
| 2) | - START PRINT (INPUT) |
| 3) | +24/20/10,5 V |
| 4) | GND |
| 5) | + PRINT END (OUTPUT) |
| 6) | - PRINT END (OUTPUT) |

DIN plug
Internal view, soldering side

PIN OUT FOR ELECTRONIC UNIT WITH EXPANSION BOARD – INTERNAL +24V POWER SUPPLY AND GROUND



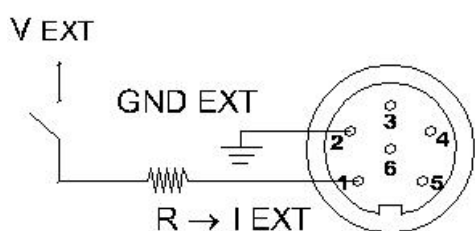
- | | |
|----|-----------------------|
| 1) | + START PRINT (INPUT) |
| 2) | GND |
| 3) | + ALARM (OUTPUT) |
| 4) | GND |
| 5) | + PRINT END (OUTPUT) |
| 6) | +24V |

DIN plug
Internal view, soldering side

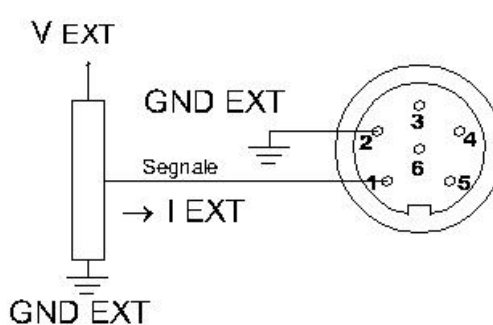
Wiring for I/O signals
Electronic Unit without expansion board
External power supply and ground

START PRINT
(soldering side view)

SWITCH



PNP PHOTOCELL



Input signal

V_{ext} = external tension

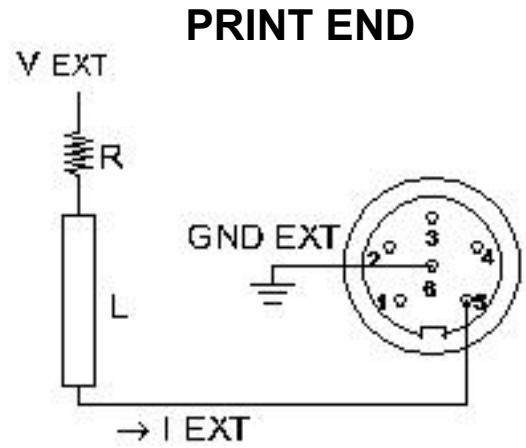
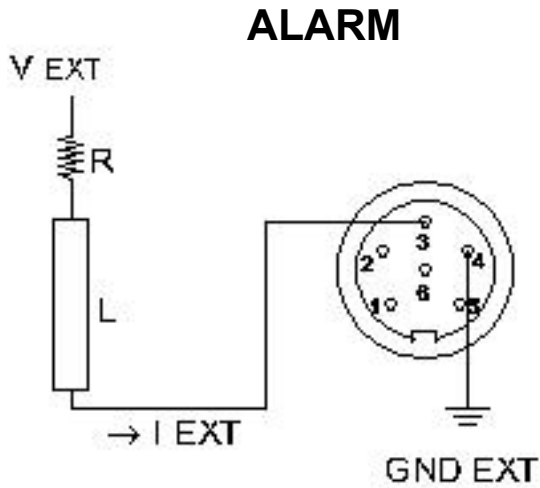
I_{ext} = current on external circuit

R = external circuit resistance

V _{ext} (Volt)	I _{ext} (mA)	R (Ohm)
24	15	1270
24	30	470
24	50	150
12	15	470
12	30	70
5	15	0

suggested values in **bold**

ALARM and PRINT END signals
(soldering side view)



Output signals

Alarm and Print End

V_{ext} = external tension

I_{ext} = current on external circuit

R = Current limiting resistance of external circuit

L = Load impedance of external circuit

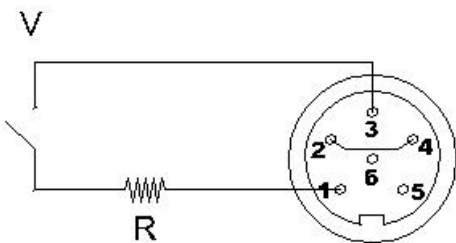
V_{ext} (Volt)	I_{ext} (mA)	R + L (Ohm)
24	10	2400
24	20	1200
24	50	240
12	10	1200
12	20	600
12	50	120
5	10	500
5	20	250
5	50	100

suggested values in **bold**

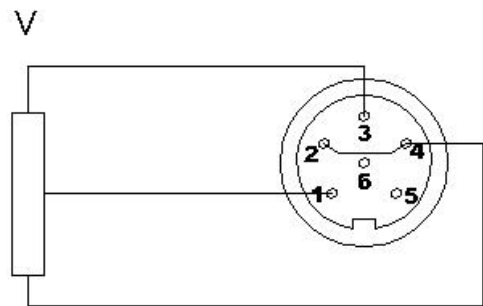
Wiring of I/O signals
Electronic Unit without expansion board
Internal power supply and ground

START PRINT
(soldering side view)

SWITCH



PNP PHOTOCELL



Input signal

V = Internal tension

I = current

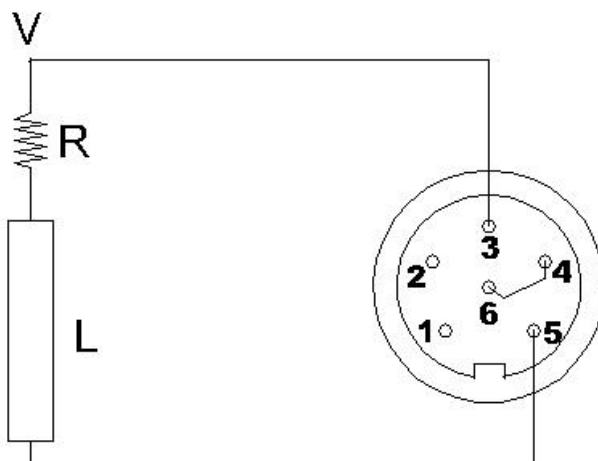
R = external circuit resistance

V (Volt)	I (mA)	R (Ohm)
24	15	1270
24	30	470
24	50	150
12	15	470
12	30	70
5	15	0

suggested values in **bold**

**PRINT END signal – ALARM signal is unavailable
(soldering side view)**

PRINT END



Output signal

Print End

V = external tension

I = current on external circuit

R = Current limiting resistance of external circuit

L = Load impedance of external circuit

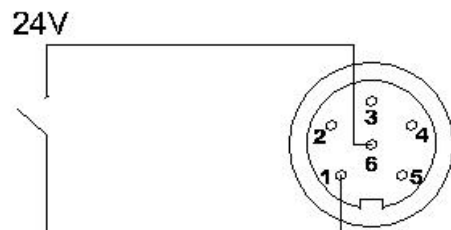
V (Volt)	I (mA)	R + L (Ohm)
24	10	2400
24	20	1200
24	50	240
12	10	1200
12	20	600
12	50	120
5	10	500
5	20	250
5	50	100

suggested values in **bold**

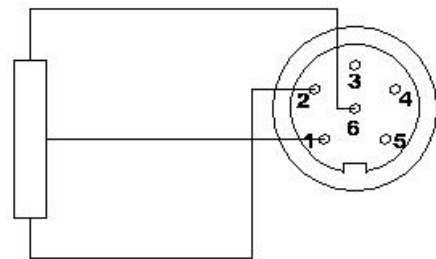
Wiring of I/O signals
Electronic Unit with expansion board
+24V internal power supply and ground

START PRINT signal
(soldering side view)

SWITCH



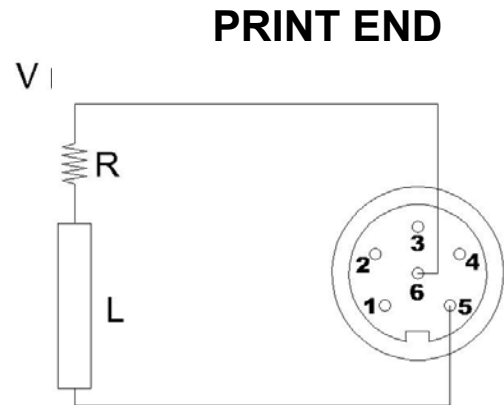
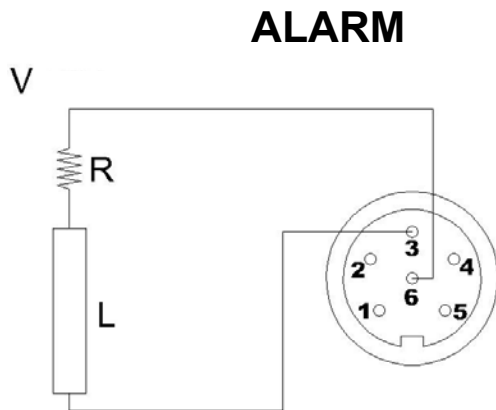
PNP PHOTOCELL



Input signal

Internal circuit resistance = 1800 Ohm

**ALARM and PRINT END signals
(soldering side view)**



Output signals

Alarm and Print End

V = internal tension

I = current

R = Current limiting resistance of external circuit

L = Load impedance of external circuit

V = internal +24 Volt

Output transistor can drive up to 1 ampère.

$$I = V/(R+L)$$

$$I_{max} = 1A$$

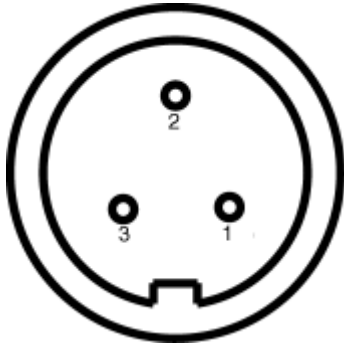
V (Volt)	I (mA)	R + L (Ohm)
24	10	2400
24	20	1200
24	50	240

suggested values in **bold**

Wiring of I/O signals
3, 4 e 5 poles connectors

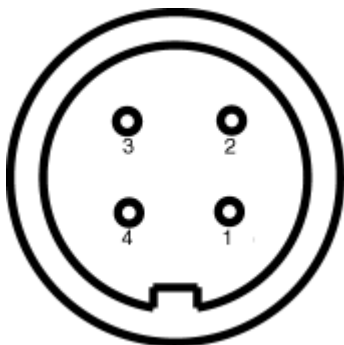
Devices with I/O expanded control unit, interne +24V supply and ground have these 3 signals mapped, besides on a 6 poles female connector, also on a 3,4 and 5 poles male connector .
Sockets for signal wiring have following configurations:

Pin out for Electronic Unit with expansion board – Internal +24V power supply and ground



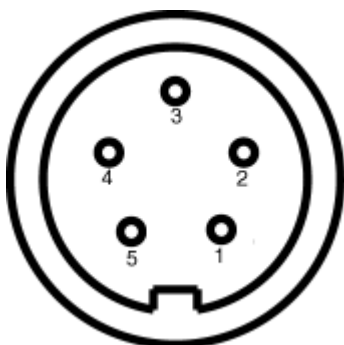
- 1) GND
- 2) +24V
- 3) INPUT - START PRINT signal

**3 poles, female, START PRINT signal
Internal view, soldering side**



- 1) GND
- 2) +24V
- 3) OUTPUT - PRINT END signal
- 4) unused

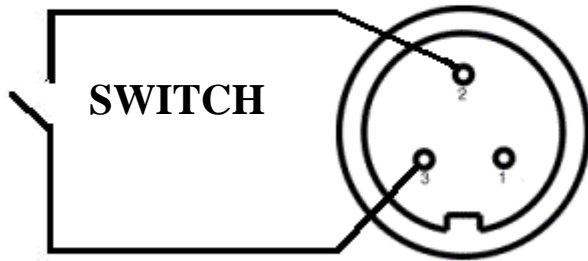
**4 poles, female, PRINT END signal
Internal view, soldering side**



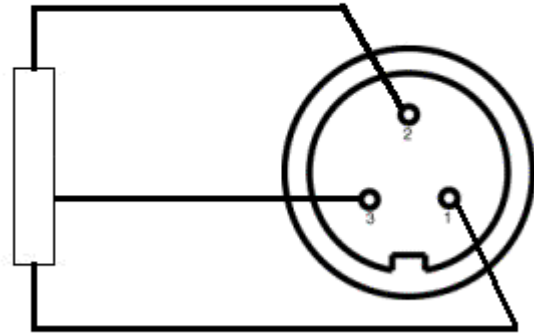
- 1) GND
- 2) +24V
- 3) OUTPUT - ALARM signal
- 4) unused
- 5) unused

**5 poles, female, ALARM signal
Internal view, soldering side**

START PRINT signal
(soldering side view)



PHOTOCELL

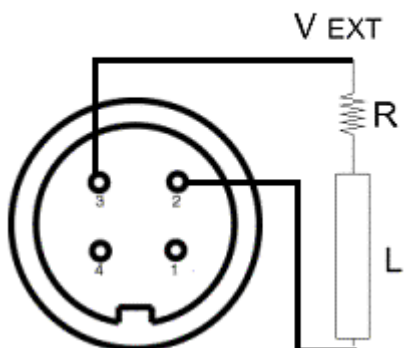


Input signal

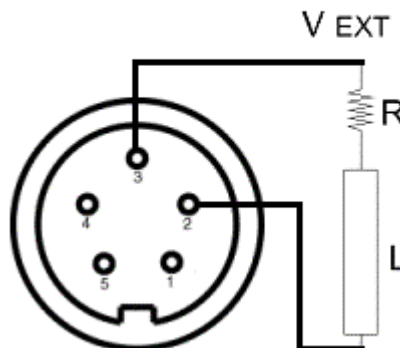
Internal circuit resistance = 1800 Ohm

**ALARM and PRINT END signals
(soldering side view)**

PRINT END



ALARM



Output signals

Alarm and Print End

V = internal tension

I = current

R = Current limiting resistance of external circuit

L = Load impedance of external circuit

V = internal +24 Volt

Output transistor can drive up to 1 ampère.

$$I = V/(R+L)$$

$$I_{max} = 1A$$

V (Volt)	I (mA)	R + L (Ohm)
24	10	2400
24	20	1200
24	50	240

suggested values in **bold**

APPENDIX 'F' – CONTROL CHARACTER

The following table summarizes US ASCII, ANSI X3.4-1986 codes (ISO 646 International Reference Version). Codes with decimal value from 0 to 31 are non-printable (control) characters.

Legend:

Dec – Decimal character code

Oct – Octal character code

Hex - HexDecimal character code

Dec	Oct	Hex	Name	Description
0	0	0	NUL (Ctrl-@)	NULL
1	1	1	SOH (Ctrl-A)	START OF HEADING
2	2	2	STX (Ctrl-B)	START OF TEXT
3	3	3	ETX (Ctrl-C)	END OF TEXT
4	4	4	EOT (Ctrl-D)	END OF TRANSMISSION
5	5	5	ENQ (Ctrl-E)	ENQUIRY
6	6	6	ACK (Ctrl-F)	ACKNOWLEDGE
7	7	7	BEL (Ctrl-G)	BELL (Beep)
8	10	8	BS (Ctrl-H)	BACKSPACE
9	11	9	HT (Ctrl-I)	HORIZONTAL TAB
10	12	0A	LF (Ctrl-J)	LINE FEED
11	13	0B	VT (Ctrl-K)	VERTICAL TAB
12	14	0C	FF (Ctrl-L)	FORM FEED
13	15	0D	CR (Ctrl-M)	CARRIAGE RETURN
14	16	0E	SO (Ctrl-N)	SHIFT OUT
15	17	0F	SI (Ctrl-O)	SHIFT IN
16	20	10	DLE (Ctrl-P)	DATA LINK ESCAPE
17	21	11	DC1 (Ctrl-Q)	DEVICE CONTROL 1 (XON)
18	22	12	DC2 (Ctrl-R)	DEVICE CONTROL 2
19	23	13	DC3 (Ctrl-S)	DEVICE CONTROL 3 (XOFF)
20	24	14	DC4 (Ctrl-T)	DEVICE CONTROL 4
21	25	15	NAK (Ctrl-U)	NEGATIVE ACKNOWLEDGE
22	26	16	SYN (Ctrl-V)	SYNCHRONOUS IDLE
23	27	17	ETB (Ctrl-W)	END OF TRANSMISSION BLOCK
24	30	18	CAN (Ctrl-X)	CANCEL
25	31	19	EM (Ctrl-Y)	END OF MEDIUM
26	32	1A	SUB (Ctrl-Z)	SUBSTITUTE
27	33	1B	ESC (Ctrl-[])	ESCAPE
28	34	1C	FS (Ctrl-\)	FILE SEPARATOR
29	35	1D	GS (Ctrl-])	GROUP SEPARATOR
30	36	1E	RS (Ctrl-^)	RECORD SEPARATOR
31	37	1F	US (Ctrl-_)	UNIT SEPARATOR

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