

**THERMAL and
THERMAL TRANSFER
PRINTERS**

**PROGRAMMING
MANUAL
EL1 – EL2**



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ELECTRONIC GROUPS AND PRINTER MODELS

This manual refers to next electronic groups:

- **Electronic 1** with next models:

WITTY 630	WITTY 830	WITTY 1230
SMART 630	SMART 830	
BH 53 – 6 – 7.52	BH 80 – EL1	
AH 53 – 6 – 7.52	AH 106 – EL1	
AH 670	AH 870 – EL1	



- **Electronic 2** with next models:

WITTY 216	WITTY 218
WITTY 260	WITTY 280
SMART 260	SMART 280

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MANUAL CONVENTIONS

This manual contains software programming commands available electronic groups EL1 and EL2 mounted into **italora** printers.

Some commands are common (and so identical) to every electronic group; other commands, instead, must be distinct depending on printer model you have to program. In this case the electronic group will be pointed out by page background color, with next criterion:

GROUP ELECTRONIC 1

All information about printer models in this group will have a **GRAY** background

GROUP ELECTRONIC 2

All information about printer models in this group will have a **SKY-BLUE** background

HEAD RESOLUTION and PRINT WIDTH

MODEL	RESOLUTION (Dots / mm)	WIDTH	
		(mm)	(dots)
WITTY 630	6	52.8	320
WITTY 830	7.52	51.1	384
WITTY 1230	12	54.2	640
SMART 630	6	105.6	640
SMART 830	8 s. 7.52	102	768
BH 53 – 6	6	52.8	320
BH 53 – 7.52	7.52	51.1	384
BH 80 EL1	8	80	640
AH 53 – 6	6	52.8	320
AH 53 – 7.52	7.52	51.1	384
AH 106 – 6	6	105.6	640
AH 106 – 8 EL1	8 s. 7.52	102	768
AH 870	8 s. 7.52	102	768
WITTY 216	6	52.8	320
WITTY 218	8	56	448
WITTY 260	6	52.8	320
WITTY 280	8	56	448
SMART 260	6	105.6	640
SMART 280	8	104	832

PRINTING TOP SPEED

PRINTER MODEL	SPEED mm / sec
WITTY 630	150
WITTY 830	150
WITTY 1230	150
SMART 630	150
SMART 830	150
BH 53 – 6	150
BH 53 – 7.52	150
BH 80 EL1	150
AH 53 – 6	150
AH 53 – 7.52	150
AH 106 – 6	150
AH 106 – 8 EL1	150
AH 870 EL1	150
WITTY 216	120
WITTY 218	120
WITTY 260	120
WITTY 280	120
SMART 260	120
SMART 280	100

FRONTAL LIGHTS

On every frontal panel of **italora** printers there are two or three bright leds; their colors show the state of printer. In particular the three groups are so equipped:

Electronic 1:

- 1 Red led
- 1 Green / Orange led

Electronic 2:

- 1 Red led
- 1 Green led

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 / Orange Led: | blinking Green - Orange | EL.1 |
| • Green Led: | blinking Green - Off | EL.2 |

HEAD HOT TEMPERATURE STATE

In this printer state the led conditions are:

- | | | |
|-----------------------|------------------------------|-------------|
| • Red Led: | fixed Red | |
| • Green / Orange Led: | blinking Orange - Off | EL.1 |
| • Green Led: | Off | EL.2 |

PROGRAMMING SYNTAX ERROR STATE

In this printer state the led conditions are:

- | | | |
|-----------------------|---------------------|-------------|
| • Red Led: | fixed Red | |
| • Green / Orange Led: | Fixed Orange | EL.1 |
| • Green Led: | Off | EL.2 |

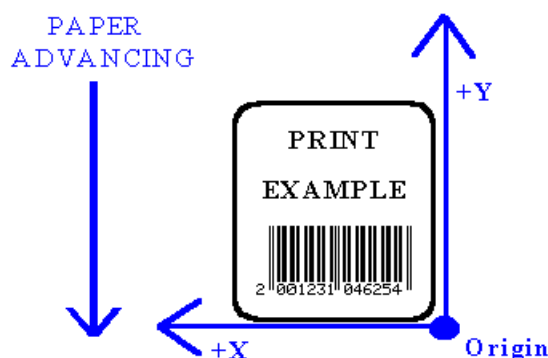
HOME POSITION DEFINITION

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.

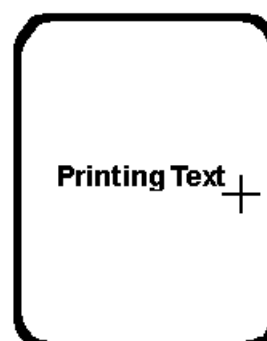
Consider the paper advancing direction as shown in the next figure: the co-ordinates X and Y have a positive direction as shown by arrows.



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 “+”

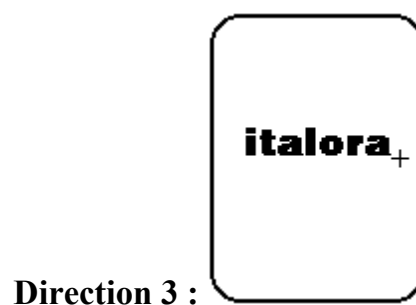
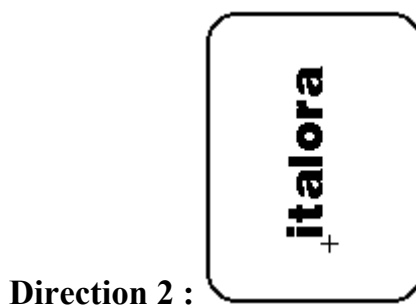
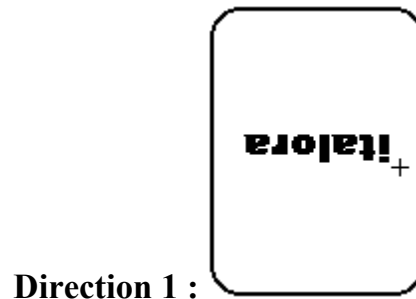
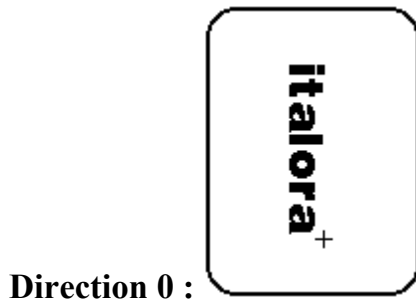
PAPER
ADVANCING



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 “+”.

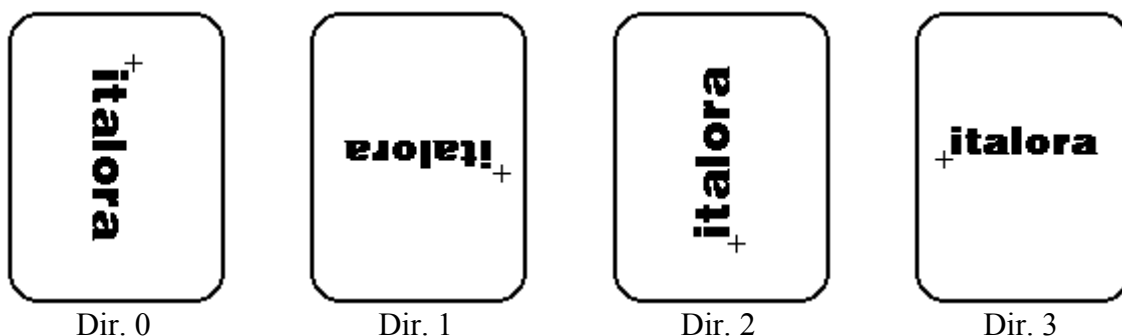
NOTE: The paper advancing is the same of the above examples.



TEXTS - LEFT ALIGNEMENT

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



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

NOTE: The left alignment 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 print** of a label
- Commands for **storing and print** of a label

IMMEDIATE PRINTING 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.

It's possible to store into permanent memory up to:

26 labels, each containing up to 100 fields	EL. 1
5 labels, each containing up to 50 fields	EL. 2

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.

Per le tre famiglie di elettroniche avremo dunque a disposizione:

26 layouts, (A...Z) each containing up to 100 fields	EL. 1
5 layouts, (A...E) each containing up to 50 fields	EL. 2

Afterwards all commands will be explained.

PAY ATTENTION

Printer models **W216** and **W218** don't have any permanent memory. All commands that refer to this type of memory, in these two models work on VOLATILE memory: stored data will be lost at power off.

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 depending on electronic family.

Electronic 1

INDEX	DIMENSIONS (in DOT)	FONT	SPACING
G = 0	5 x 7	Standard	fixed
G = 1	5 x 5	Micro	fixed
G = 2	height 32	Big	proportional
G = 3	8 x 13	Draft	fixed
G = 4	32 x 48	OLAF downloadable	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	Big	proportional
G = 11	8 x 13 reverse	Draft	fixed
G = 12	32 x 48 reverse	OLAF downloadable	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

NOTES:

- Font "Title" prints only numeric digits, uppercase letters and characters: BLANK, ' * ', ' / ', ' _ '
- Font "OLAF downloadable" can be downloaded via serial (or parallel) port from a PC.
This font shares the same permanent memory area used by images and logo (Splitting Memory); it's necessary to pay attention to memory settings used

witty 218 – witty 280 – smart 260 – smart 280			
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



witty 216 – witty 260			
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	16 x 24	Switzerland	fixed
G = 5	24 x 24	New Century	fixed
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	16 x 24	Switzerland	fixed
G = 13	24 x 24	New Century	fixed
G = 14	height 32 reverse	Arial	proportional
G = 15	height 19 reverse	Compact	proportional

NOTE:

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

<u>Standard</u>	0123456789ABCDEFGHILMNOPQRSTUVWXYZ	
<u>Micro</u>	0123456789ABCDEFGHILMNOPQRSTUVWXYZ	
<u>Big</u>	0123456789ABCDEFGHILMNOPQRSTUVWXYZ	
<u>Draft</u>	1234567890ABCDEFGHILMNOPQRSTUVWXYZ	
<u>Motor</u>	0123456789ABCDEFGHILMNOPQRSTUVWXYZ	
<u>New Century</u>	0123456789ABCDEFGHILMNOPQRSTUVWXYZ	
<u>Arial</u>	0123456789ABCDEFGHILMNOPQRSTUVWXYZ	
<u>Title</u>	0 1 2 3 4 5 6 7 ABCDEFG	
<u>Compact</u>	0123456789ABCDEFGHILMNOPQRSTUVWXYZ	
<u>Century</u>	0123456789ABCDEFGHILMNOPQRSTUVWXYZ	
<u>Arial Rounded</u>	0123456789ABCDEFGHILMNOPQRSTUVWXYZ	
<u>Bookman</u>	1234567890ABCDEFGHILMNOPQRSTUVWXYZ	
<u>Switzerland</u>	1234567890ABCDEFGHILMNOPQRSTUVWXYZ	W216 - W260

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 PRINT

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 generator of characters
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 (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
	0..49
D	Text printing direction
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
G	Font generator of characters
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
	0..49
D	Text printing direction
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
G	Font generator of characters
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.

VARIABLE TEXTS PROGRAMMING

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 wheight 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

0..49

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 generator of characters

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 af 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 "Some 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 two control characters <Carriage Return> + <Line Feed> (having ASCII code 13 and 10 decimal).

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 (all models but **W216** and **W218** which don't have any permanent memory) also after you turn off printer.

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 "Some 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	RESERVED – do not use	

COMMANDS FOR BARCODES

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.

BARS 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.

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

With this 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.

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&; it's not possible to use all these commands in the same program.

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, 1, 80, 7

This way you compose a barcode with printing direction=3, co-ordinates X=150 and Y=35, height = 80 dot; barcode is a 2/5 Interleaved 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

IMMEDIATE PRINT

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

0..49

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”

VARIABLE BARCODES PROGRAMMING

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

0..49

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 "Some layout programming examples"

LINES

HORIZONTAL OR VERTICAL LINES IMMEDIATE PRINT

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 PRINT

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

0..49

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

IMMEDIATE PRINT OF RECTANGLES

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

0..49

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

SHADY AND FILLED AREA IMMEDIATE PRINTING

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	Lenght of shady area base (in X direction) in dots
H	Lenght 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

0..49

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 printing or storing of graphic data.

IMMEDIATE IMAGES PRINTING

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.

COMMAND ?17&: START SWITCH

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**

COMMAND ?17&: MAIN BODY

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”.

COMMAND ?17&: CLOSE SWITCH

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

Syntax is:

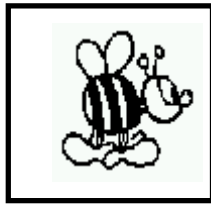
?17& .

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&;40FFE18
?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.

Before storing an image you must be sure to have correctly arranged the memory of printer; see command ?80& for further informations.

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.

COMMAND ?37&: START SWITCH

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.

COMMAND ?37&: SENDING GRAPHIC DATA

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.

COMMAND ?37&: CLOSING OPERATIONS

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.

IMMEDIATE PRINT OF IMAGES FROM PERMANENT MEMORY

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

Not available

W216 - W218

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..49
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 IN PERMANENT MEMORY

LAYOUT PROGRAMMING

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

PARAMETERS OF A LABEL IN PERMANENT MEMORY

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

Not Available

W216 - W218

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..49	
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
	I Unused		Only for EL. 2
	J Unused		
	K Unused		
	L Unused		
	M Text alignment	1=Left	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

Not Available

W216 - W218

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..49
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

Not Available

W216 - W218

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...49

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 LABEL EDITING

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 “Texts - Left Alignement”.

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.

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 PRINTING

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

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 EXAMPLES

EXAMPLE FOR ELECTRONIC 1

?07&100
?51&0
?77&10
?27&
?81&0
?08&0
?63&0
?43&0
?44&1
?60&1
?76&00000000
?06&-90
?66&0
?04&A
?53&A,0,20,524,16,2,11
?53&A,1,20,721,16,2,11
?53&A,2,11,404,282,4,90
?53&A,3,11,611,282,4,90
?05&A
?22&0,390,1,1,0
?52&20,438,39,7,11;Use liquid
?52&20,486,39,7,11;It likes indirect light
?52&20,420,39,7,11;fertilizing
?52&20,609,35,7,11; fertilizing
?52&20,630,34,7,11; Use liquid
?52&20,683,35,7,11; It likes indirect light
?46&377,2,387,201,4
?46&574,2,387,191,4
?18&0,001,100,1,1,1,2
?82&0,0,408,250,1,2,11,0,0,0
?83&0,0,1
?83&1,0,1
?18&1,002,100,1,1,1,2
?82&1,0,617,250,1,2,11,1,0,0
?83&0,1,1
?83&1,1,1
?22&0,390,1,1,0
?25&Black Orchid
?25& Black Orchid
?09&2
?10&1
?11&2
?13&2
?25&12345671
?09&2
?10&1
?11&2
?13&2
?25&12345672
?22&0,390,1,1,0

EXAMPLE FOR ELECTRONIC 2

?67&0
?69&0
?07&100
?51&0
?27&
?81&0
?08&0
?43&0
?44&1
?60&1
?76&00000000
?68&0
?06&-96
?12&1
?04&A
?53&A,0,10,37,32,4,11
?53&A,1,10,199,201,6,11
?53&A,2,10,652,200,6,11
?53&A,3,10,701,425,5,11
?53&A,4,11,79,369,3,121
?05&A
?22&0,525,1,1,0
?46&56,244,102,723,4
?52&10,37,127,2,11;Ingredients:
?52&10,239,125,3,12;Jam, Cocoa, Starch-flour, Flour, Salt, Water
?52&10,37,201,6,11;Pack. date:
?52&10,492,200,6,11;Best before:
?52&10,85,258,6,11;Tare (g)
?52&10,590,258,6,11;Net (Kg)
?52&10,369,258,6,11;\$ / Kg
?52&10,458,425,5,11;Price to pay:
?52&10,630,301,6,11;0,370
?52&10,115,301,6,11;300
?52&10,371,301,6,11;12.500
?15&458,484,333,2,9
?22&0,525,1,1,0
?25&Grand Mo' Pie
?25&16/04/1999
?25&30/04/2000
?25&4.625
?09&2
?10&1
?11&3
?13&2
?25&200123104625
?22&0,525,1,1,0

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

GAP AFTER PRINTING

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.

W216 and **W218** printer models don't have any permanent memory, so the value of gap you program will be valid until you turn off printer; at power on the new gap value will be 0.

When you program a gap value different from the one already present into permanent memory printer will execute a label reallignement 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

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).
Below we divide printers depending on their electronic family.

Electronic 1 family

Electronic 2 family

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 push down the range of power for printhead. This setting is kept into permanent mamory.

Syntax is:

?51& L

and parameter means:

- | | |
|----------|--------------------------|
| 0 | Standard printhead power |
| 1 | Reduced printhead power |

WARNING: Models **witty 1230** don't have command ?51&N.

The second command programs the percent of power to use after having choosen 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 |
|----------|---|

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.

We have to distinguish the electronic families.

Labels and Tags mode

Electronic 1

For models belonging to this family you can select Label or Tag mode by two dip switch located on back panel of printer. Changings must be done when printer is turned off.

In particular we have:

- **Label Mode:** you have to set to **OFF** the dip switches n° 5 e n° 7 into the second bank (it's the right one when you look the rear panel from the back side).
- **Tag Mode:** you have to set to **OFF** the dip switch n° 5 and to **ON** the dip switch n° 7 into the second bank (it's the right one when you look the rear panel from the back side).

Once you have configured dip switches, you have to do the "Pushed button start" of printer; before doing that you have to put under label photosensor the whitest part of label or tag. In this way printer will acquire the values of transparence of labels or tags.

Continuous Mode

To work in continuous mode you have to set to **ON** the dip switch n° 5 into the second bank (it's the right one when you look the rear panel from the back side).

For more details see the table "Dip Switch for Electronic 1"

Labels, Tag and Continuous Mode

Electronic 2

For models belonging to this electronic family you can program the working mode by a software command.

Syntax is:

?67& N

and parameter **N** means:

- | | |
|----------|-----------------------|
| 0 | Labels or Tags mode |
| 1 | Continuous paper mode |

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.

WARNING:

W216 and **W218** models don't have permanent memory; at power on they will be always in continuous paper mode.

Example: ?67&1

This command will program printer to work in continuous paper mode

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.

Electronic 1

For this electronic family you can set the preprinted labels working mode by dip switches placed on rear printer panel.

If you have to use preprinted labels you have to set to **ON** the dip switch n° 8 into the second bank (it's the right one when you look the rear panel from the back side).

NOTE: Once dip switch is set, you must restart print with pressed print button, being careful to put the **white** part of label under paper photosensor.

Electronic 2

For this electronic family 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.

NOTE: Before transmitting this command to printer you must be careful to put the **whitest** part of label under paper photosensor.

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	Electronic 1
Not available	Electronic 2

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.

LABEL TAKEN PHOTSENSOR

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.

Label taken Photo can be programmed in different ways depending on electronic families of printer. Let's see all cases in detail.

Electronic 1

Label taken Photo is programmed by a dip switch on rear panel of printer.

To **enable** it you have to set to **ON** the dip switch n° 8 into the first bank (it's the left one when you look the rear panel from the back side).

To **disable** it you have to set to **OFF** the dip switch n° 8 into the first bank (it's the left one when you look the rear panel from the back side).

All settings must be done when printer is turned OFF.

Electronic 2

Label taken Photo is programmed by the next command:

?68& F

and **F** parameter means:

0 Label taken Photo disabled

1 Label taken Photo enabled

Example: ?68&1

You are enabling the label taken Photo

TRANSMISSION OF CONTROL CHARACTER AT THE END OF PRINT

Electronic 1

Electronic 2

This command controls the transmission of Form Feed character (FF, ASCII code = 12 Decimal = 0C 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** Character FF transmitted after printing

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

***** 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.

MEMORY PARTITION (MANAGEMENT FOR IMAGES)

For printer models belonging to electronic families 1 and 2 there is a command to split permanent memory for images and logos use.

This command has to be sent to printer before graphic images transmission, to initialize printer correctly.

Here below there are two possible cases depending on the electronic family.

Electronic 1

Printers belonging to this family have about 51 Kbyte to store graphic images and logos. This memory zone can be enabled by the following command:

?80& N

where parameter **N** means:

- 0** 0 Kbyte for Images.
- 2** About 51Kbyte for Images.

Command ?80&... is retained into permanent memory when printer is off too.

WARNING:

Permanent memory for graphic images overlaps the one for OLAF fonts (see chapter “TESTS” for more details); it's not possible to use these fonts if you want to store contemporary graphic images.

Electronic 2

Printers belonging to this family have about 53 Kbyte to store graphic images and logos.

By command ?80&... it's possible to split this memory and use one part for label composing and the other for images and logos storing.

If you increase the dimension of graphic image memory you decrease implicitly the dimension of longest printable label. A complete report is shown in the table here below.

Programming of ?80&... command is kept in permanent memory when printer is off too.

Syntax is:

?80& N

witty 260, witty 280, smart 260, smart 280

not available

witty 216, witty 218

and parameter means:

N Split Level. Correct values are in the range 0 ... 2, accordingly with the following table:

N	Graphic memory dimension	Longest printable label			
		Witty 260	Witty 280	Smart 260	Smart 280
0	0 Kbyte	500 mm	285 mm	250 mm	321 mm
1	23 Kbyte	400 mm	228 mm	200 mm	290 mm
2	53 Kbyte	273 mm	155 mm	136 mm	251 mm

RECOGNITION OF DEGREE CHARACTER °

FILTER OF NOT NUMERIC CHARACTERS FROM ONLY NUMERIC BARCODE DATA

INFINITE CYCLE OF PRINTING AT POWER ON

AUTOMATIC ACTIVATING OF LAYOUT “A” AT POWER ON

This command can enable or disable some particular functions. They are:

- 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

Not available

W216 e W218

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.

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 paramater **XXX** means:

XXX 3 alphanumeric digits of the code

SERIAL PORT PARAMETERS CONFIGURATION

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 turning off.

Syntax is:

?85& B , P

and parameters mean:

B One digit for Baudrate. It can only be:

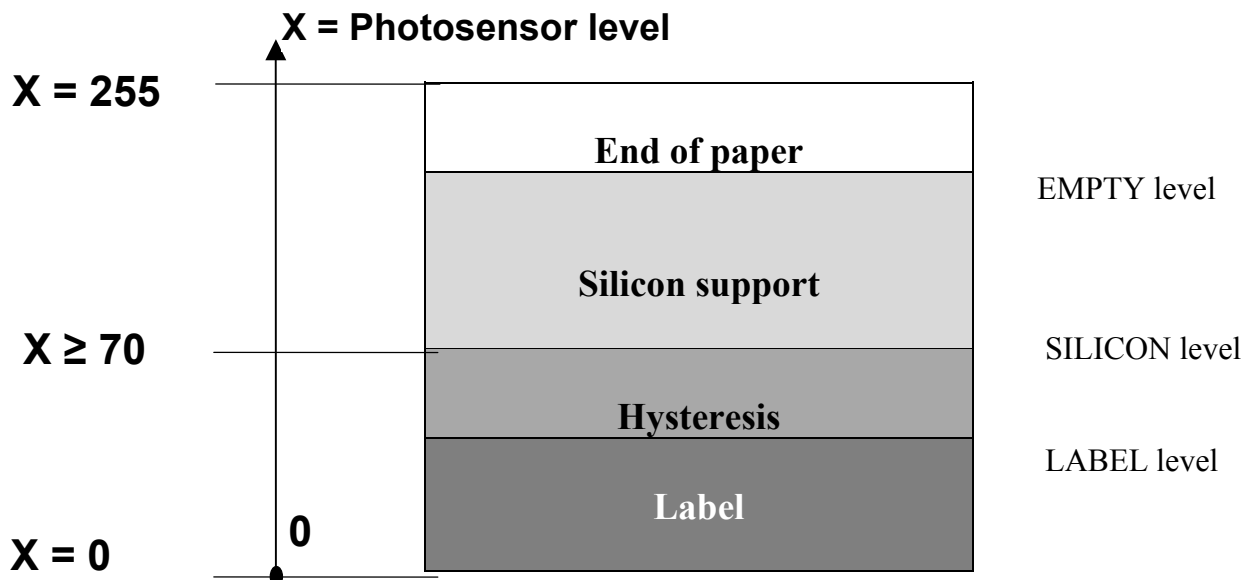
- 0** = 2400 BAUD
- 1** = 4800 BAUD
- 2** = 9600 BAUD
- 3** = 19200 BAUD
- 4** = 38400 BAUD

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

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 $\text{Label} + (\text{Silicon} - \text{Label}) / 2$
 - 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.

EXTERNAL PICK & PLACE SIGNALS MANAGEMENT

All following paragraph is valid only for electronic families:

Electronic 1

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:

PRINT_CONSENT	Input signal: it gives a consent to print
PRINT_END	Output signal: it tells the end of print cycle
AUX_OUT	Auxiliary output, alarm signal

PRINT_CONSENT signal is only useful **to control** the print, not to begin it; to do that you need an appropriate command (?01& or ?14&...)

Refer to APPENDIX G for hardware wiring details.

Electronic 1

The activation is done by two operations: the first is related to an internal jumper mounted on the electronic board, the second is related to a dip switch on rear panel of printer.

Internal Jumper Setting

Jumper JD must be closed on position 2-3 (refer to Use Manual for topographic map of board)

Rear Dip Switch Setting

Dip Switch n° 6 into bank 2 (it's the right one when you look the rear panel from the back side) must be set to ON (Low position)

Let's see each optoisolated signal in detail.

PRINT_CONSENT SIGNAL

It is an input signal (driven by an external device like a PLC or a photosensor); its function is to give the permission to print of a label when Pick & Place option is activated.

Refer to APPENDIX G for hardware wiring details.

PRINT_END SIGNAL

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

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.

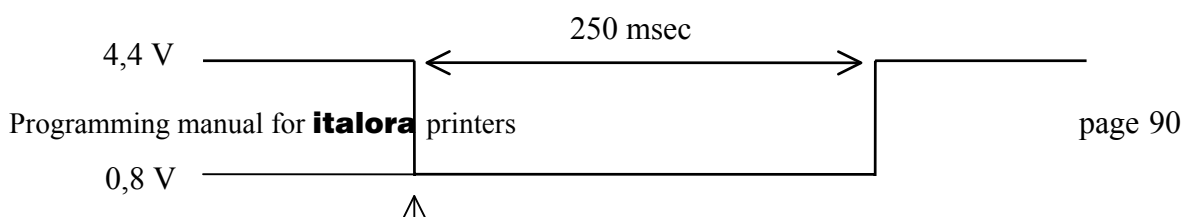
First Mode:

First mode foresees the activation of an impulse (optotransistor during this phase is conducting) of 250 milliseconds, counted starting from the end of printing cycle.

During this phase the PRINT_END signal commutes from a high level (+4,4V) to a low level (+0,8V).

The lowest time between two labels in this case will be 250 msec.

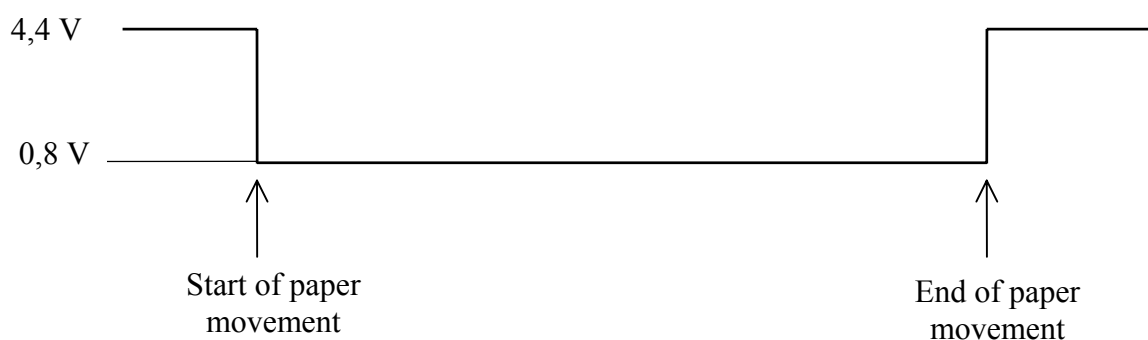
Here above there is the timing sketch of signal.



Second Mode:

Second mode foresees optotransistor has to conduct during all time of paper advancing, so in this period the signal level is low.

Here above there is the timing sketch of signal.



Refer to APPENDIX G for hardware wiring details.

AUX_OUT SIGNAL (AUXILIARY OUTPUT):

This output signal is useful to say an external device in which working state printer is.

In particular, if there are conditions of end of paper or end of ink ribbon, the signal goes down to a low level (optotransistor during this phase will conduct) and it stay low till normal working is not restored.

Refer to APPENDIX G for hardware wiring details.

PRINTER STATUS

SENSORS AND DIGITAL INPUTS TEST

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

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

N	Values returned from printer
0	160 = normal (ambient temperature) 76 = max (~60° C)
1	0 = top intensity 255 = lowest intensity
2	15 = with label 70 = with silicon support
3	220 = with label 0 = without label

OTHER SERIAL ANSWERS

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 | (Not available for models: W216 and W218) |

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)

COUNTERS AND CLOCK

NOTE:

For models **W216** and **W218** counters and internal clock are not available

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.

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	Electronic 1
?18& N , ST , U/D , MOD , INC	Electronic 2

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 (correct for Electronic 1) 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.

Commands for RTC are the next:

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

NOTE:

Not always printer models have an internal RTC. In particular we have:

Electronic 1

All printers belonging to this family have an internal RTC

Electronic 2

216 and **218** models have no RTC device inside and cannot support it.

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 DDMMYY F = 1 MMDDYY F = 2 YYMMDD F = 3 DDMMYYYY F = 4 MMDDYYYY F = 5 YYYYMMDD when T = 1 it is: F = 0 hhmmss F = 1 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)

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

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)

HOURL / 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

Not Available

W216 - W218

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..49
D	Text printing direction
X	Co-ordinate X, in dot, of field origin
Y	Co-ordinate Y, in dot, of field origin
G	Font generator of characters
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.

WARNING:

For printers of *ELECTRONIC 2* family you can use this command only if internal clock is mounted. For these printers the clock is an option.

REALTIME COMMANDS

All commands starting with exclamation mark ‘!’ are called “Realtime commands”, because they are not bufferized but they are executed as soon as received.

All next commands are Realtime commands:

- **!0**
- **!1**
- **!2**
- **!3**
- **!4**
- **!\$**

All Realtime commands 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

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:

Electronic 1

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
19 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 put ON the dip switch n° 4 into the second bank; see paragraph "Dip Switch"

Electronic 2

06 Hex	normal behaviour condition (On Line)
07 Hex	end of paper or end of ribbon condition
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

SOFTWARE REBOOT

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 (all models but **w216** and **w218**) 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
- **Memory partition** is set to “All OLAF font” Elettronica 1
- **Memory partition** is set to “All graphic buffer” Elettronica 2
- 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

SERIAL 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 – 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

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.

SERIAL COMMUNICATIONS

italora printers can manage two well known serial communication protocols:

- Software protocol XON / XOFF
- Hardware protocol RTS / CTS

SOFTWARE PROTOCOL “XON / XOFF”

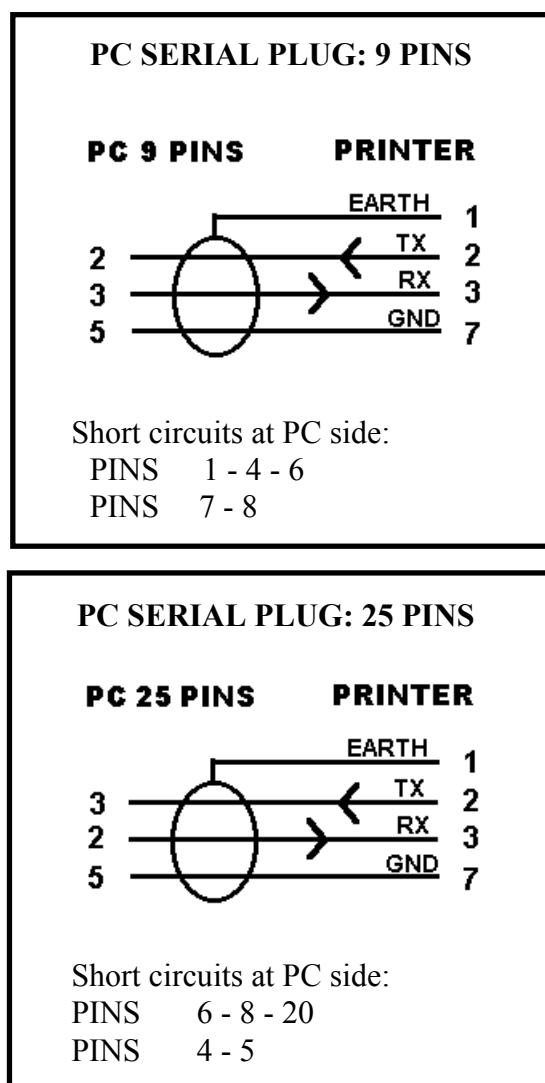
When the print serial buffer is filled more than 3/4, one control character XOFF (ASCII code 13 Hex) is sent out by printer on serial line.

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. 1: Sketch of serial cables to use the software protocol XON/XOFF

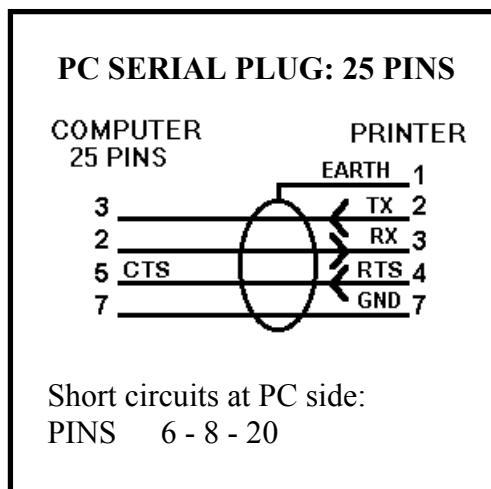
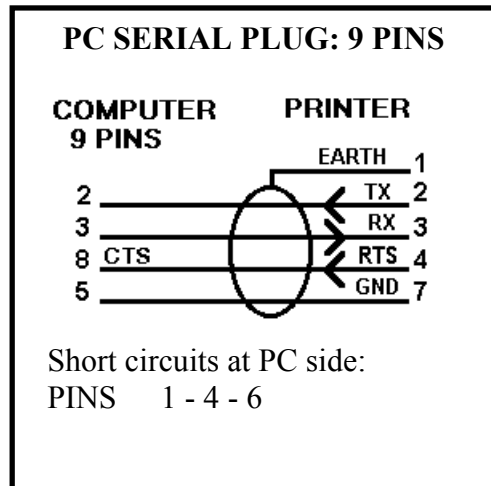
HARDWARE PROTOCOL “RTS / CTS”

If you want to use this kind of protocol you only must use the correct cable: no software implementation is requested.

Obviously the extern 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. 2: Sketch of serial cables to use the hardware protocol RTS/CTS

MACRO INTERPRETER MODE

WARNING:

Elettronica 2

For models **W216** and **W218** Macro Interpreter Mode is not available

*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.

?59&1,... 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

Electronic 1

A...E

Electronic 2

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'.

?59&2,... 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.

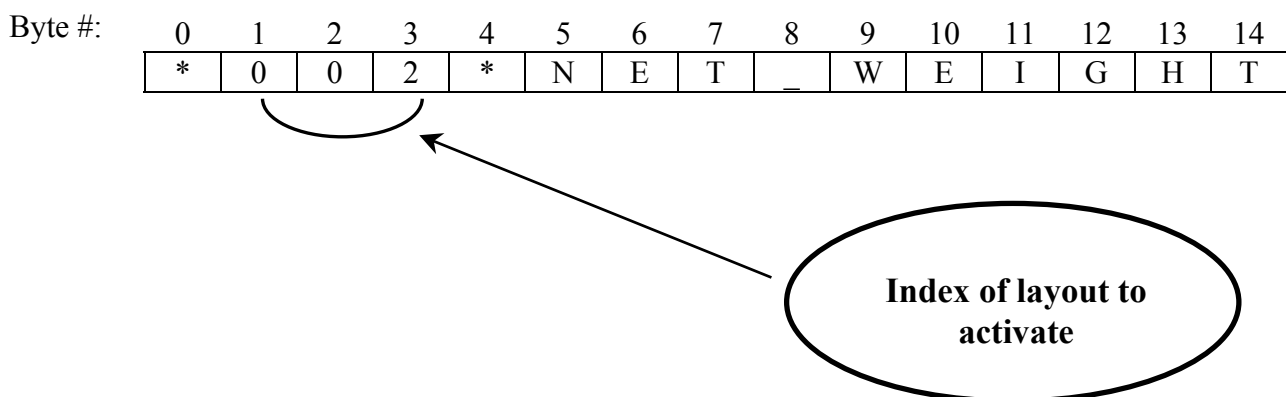
Correct values are in the range: 1 ... 255

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'.



?59&3,... 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.

?59&4,... 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:

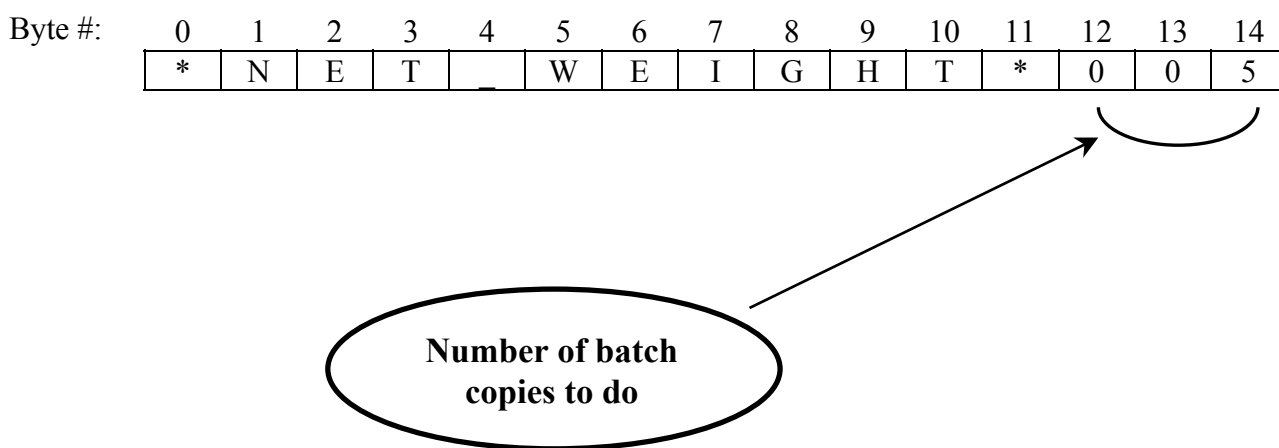
PosCop Position of the 1st digit for number of copies. Correct values are: 0...255

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).



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 lenght = 2 */
```

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	l	k	{	ï	ç	*
C	,	<	L	\	l		î	£	*
D	-	=	M	l	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: ‘^aø’

NATIONAL CHARACTERS SET

For models belonging to **Electronic 1** 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 'C' - ELECTRONIC 1: DIP SWITCHES

NOTE:

This appendix refers only to printer models belonging to **Elettronica 1** family

On the back side of printer there are two banks of Dip Switches and each of them is composed by 8 switches.

By the dip switches you can do regulations to enable or disable some features of printer.

Looking at the back panel of printer you can see:

- Bank # 1 : it's the leftmost one, near the screw for contrast regulation
- Bank # 2 : it's the rightmost one

Let's see them in detail.

WARNING:

The position HIGH of switch corresponds to OFF

The position LOW of switch corresponds to ON

DIP SWITCH BANK # 1**SERIAL PORT models**

DIP SWITCH n° 1	DIP SWITCH n° 2	BAUD RATE
OFF	OFF	19200
ON	OFF	38400
OFF	ON	4800
ON	ON	9600

DIP SWITCH n° 3	PARITY BIT
OFF	EVEN parity
ON	ODD parity

DIP SWITCH n° 4	PARITY
OFF	Parity DISABLED
ON	Parity ENABLED

DIP SWITCH n° 5	BIT PER CAHRACTER
OFF	7 BIT
ON	8 BIT

PARALLEL PORT models

DIP SWITCH n° 1	INTERFACE
OFF	CENTRONICS STANDARD
ON	OTHERS

DIP SWITCH n° 2	NOT USED
OFF	ALWAYS

DIP SWITCH n° 3	NOT USED
OFF	ALWAYS

DIP SWITCH n° 4	NOT USED
OFF	ALWAYS

DIP SWITCH n° 5	NOT USED
OFF	ALWAYS

ALL models

DIP SWITCH n° 6	PRINT METHOD
OFF	DIRECT THERMAL
ON	THERMAL TRANSFER

DIP SWITCH n° 7	MEMORY RESET
OFF	NEVER
ON	MEMORY RESET AT POWER ON

DIP SWITCH n° 8	LABEL TAKEN PHOTORENSOR
OFF	DISABLED
ON	ENABLED

DIP SWITCH BANK # 2

DIP SWITCH n° 1	DIP SWITCH n° 2	DIP SWITCH n° 3	NATIONAL CHARACTERS Selected at power on
OFF	OFF	OFF	ITALY
OFF	OFF	ON	USA ASCII
OFF	ON	OFF	SVEDEN / FINLAND
OFF	ON	ON	NORWAY / DENMARK
ON	OFF	OFF	FRANCE
ON	OFF	ON	GERMANY
ON	ON	OFF	UK
ON	ON	ON	RESERVED

DIP SWITCH n° 4	CHARACTER "SUB" (1A Hex.) ON / OFF
OFF	DISABLED
ON	CHARACTER "SUB" SERIAL TRANSMISSION AFTER THE FIRST STATUS REQUEST AFTER POWER ON

DIP SWITCH n° 5	CONTINUOUS MODE / LABEL MODE
OFF	LABEL MODE
ON	CONTINUOUS MODE

DIP SWITCH n° 6	PICK & PLACE OPTION (External Input)
OFF	DISABLED
ON	EXTERNAL INPUT USED AS PRINT CONSENT

DIP SWITCH n° 7	TAGS
OFF	LABELS
ON	TAGS

DIP SWITCH n° 8	PREPRINTED PAPER
OFF	WHITE PAPER
ON	PREPRINTED PAPER (See NOTE)

NOTE:

When you must print using preprinted labels it's necessary to execute the following initializing procedure:

1. When printer is OFF put to ON position the dip switch # 8 into the second bank
2. When printer is OFF put under the paper photosensor the brightest part of paper
3. Keep pressed the print button turning on printer until you have seen a couple of labels emitted: then you can release the button

To use these examples you have to save all commands into a text file and then to send the file to printer via serial or parallel port.

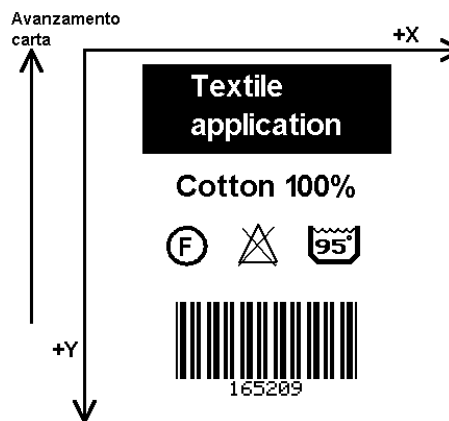
[illegible]

[illegible]

Example 2

?00&
?07&80
?06&-13
?17&232,159;0000FF8
?17&;000FFFE
?17&;003FFFF8
?17&;007FFFC
?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&;00FFFFFFE
?17&;003FFFF8
?17&;0007FFC
?17&;000038
?17&;
?17&.

?17&368,159;F80000000007C
?17&;F80000000007C
?17&;FE060C0C0C1FC
?17&;FE0E0E1C1C3FC
?17&;FB1F9F3F3E77C
?17&;F9F1F3F3F3E7C
?17&;F8E0E0E0E1C7C



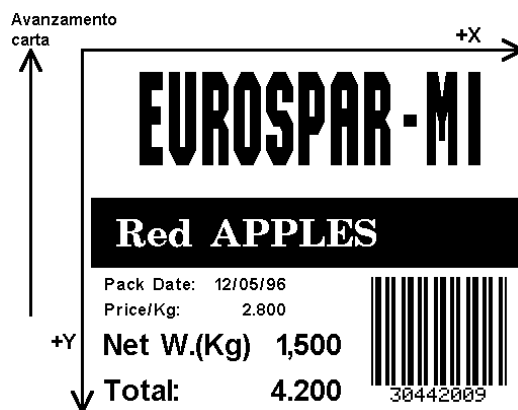
?17&;F80000000007C
?17&;F80000000007C
?17&;F80000000387C
?17&;F800000007C7C
?17&;F800000006C7C
?17&;F800000007C7C
?17&;F83FC1FFF387C
?17&;F8FFF1FFF007C
?17&;F9F0F9E00007C
?17&;F9E079E00007C
?17&;F9E079FF8007C
?17&;F9F0F9FFE007C
?17&;F8FFF801F007C
?17&;F83FF800F007C
?17&;F800F800F007C
?17&;F800F800F007C
?17&;F801F1E0F007C
?17&;F803E1F1F007C
?17&;F87FC0FFE007C
?17&;F87F003F8007C
?17&;FC00000000FC
?17&;FE000000001FC
?17&;7F000000003F8
?17&;3F800000007F
?17&;1FC0000000FE
?17&;0FFFFFFFFFFC
?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
?17&;00384C0C
?17&;0030780E

?17&;00703006
 ?17&;00603807
 ?17&;00E06C03
 ?17&;00C0C6038
 ?17&;01C183018
 ?17&;01830181C
 ?17&;03860080C
 ?17&;030C00C0E
 ?17&;071800606
 ?17&;063000307
 ?17&;0E6000183
 ?17&;0CC0000C38
 ?17&;1D80000618
 ?17&;190000031C
 ?17&;3B0000018C
 ?17&;360000008E
 ?17&;7FFFFFFFFE
 ?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 'E' – LIST OF COMMANDS KEPT INTO PERMANENT MEMORY

NOTE:

Electronic 2

The following list is not valid for models **W216** and **W218**, that don't have any permanent memory

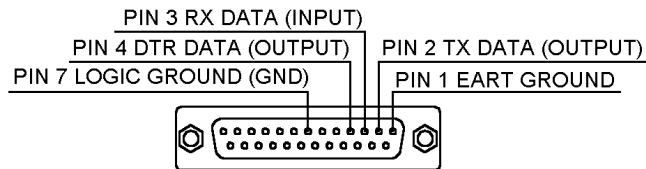
- ?06& Gap (useful only in labels mode)
- ?08& Paper Feed after printing (useful only in continuous mode)
- ?18& Counters: settings of Calculation Engines
- ?20& Enable / Disable of counters and internal clock
- ?26& Variable data fields without heading
- ?27& Variable data fields with heading
- ?37& Graphic images programming
- ?51& Printhead energy level
- ?55& Fixed data strings for barcodes 128 / EAN 128
- ?57& User code programming
- ?59& Macro Interpreter mode
- ?63& Back Feed of label before printing (in label mode)
- ?66& Print end signal
- ?73& Fixed texts storing
- ?76& Special functions
- ?79& Label parameters
- ?80& Memory partition
- ?82& Parameters for counters Images
- ?83& Enable / Disable of Engines and Images of counters

APPENDIX 'F' – SERIAL INTERFACING

Printers model equipped with serial port have a 25 pins “DB” female connector; this connector may have different pinouts based on printer’s serial port type (Rs232, Rs422 or Rs485).

Rs232

Connector pinout is



Pict. 3: Sketch of Rs232 serial cable

Connection to personal computer may be done in different ways:

COMPUTER CONNECTOR 9 PIN

COMPUTER

PRINTER

EARTH 1
TX 2
RX 3
DTR 4
GND 5

CONNETTORE COMPUTER A 25 PIN

COMPUTER

PRINTER

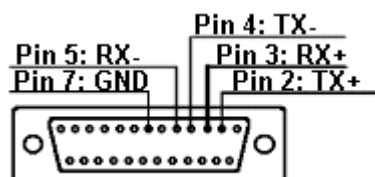
EARTH 1
TX 2
RX 3
DTR 4
GND 5

COMPUTER CONNECTOR:

- using sw protocol XON/XOFF:
short together PINS 7-8 and 1-4-6.
- using hw protocol DTR:
short together PINS 1-4-6.

Rs422

Connector pinout is



Pict. 4: Sketch of Rs422 serial cable

HANDSHAKE PROTOCOL

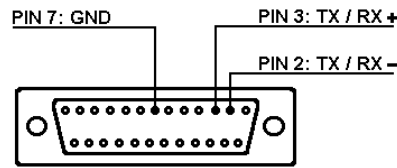
Rs422 serial line has no handshake protocol.

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

Connector pinout is



Pict. 5: Sketch of Rs485 serial cable

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 'G' – EXTERNAL SIGNALS WIRING DIAGRAM

Wiring for I/O signals 6 poles DIN connector

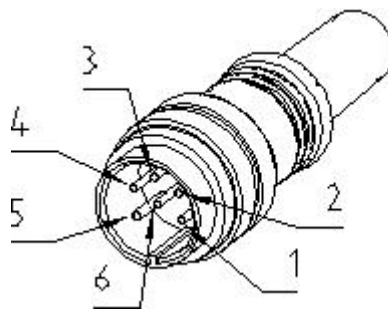
Pick & Place working mode allows an external device (i.e. PLC, photocell, pneumatic applicator, etc...) to start or halt printing.

When Pick & Place options is enabled 3 optoisolated signals are available:

START PRINT
PRINT END
ALLARME

Input – print consent
Output – print end signal
Output – auxiliary output for error conditions

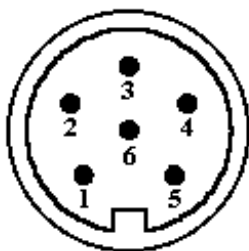
These 3 signals are mapped on a 6 poles DIN tap.
DIN plug has following outline:



External view

Pict. 6: Sketch of external signals connector

Pin out for Electronic Unit without expansion board - External power supply and ground

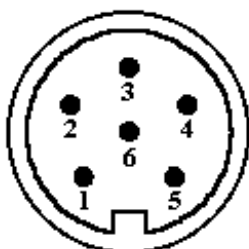


- | | |
|----|-----------------------|
| 1) | + START PRINT (INPUT) |
| 2) | - START PRINT (INPUT) |
| 3) | + ALARM (OUTPUT) |
| 4) | - ALARM (OUTPUT) |
| 5) | + PRINT END (OUTPUT) |
| 6) | - PRINT END (OUTPUT) |

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) |

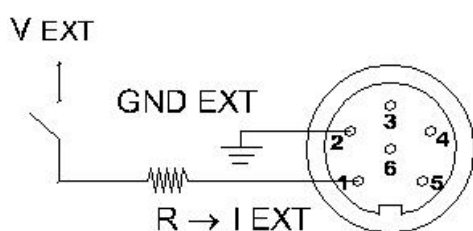
DIN plug

Internal view, soldering side

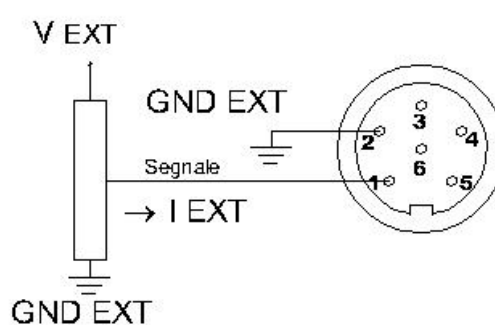
Wiring for I/O signals
Electronic Unit without expansion board
External power supply and ground

START PRINT
(soldering side view)

SWITCH



PNP PHOTOCELL



Input signal

Vext = external tension

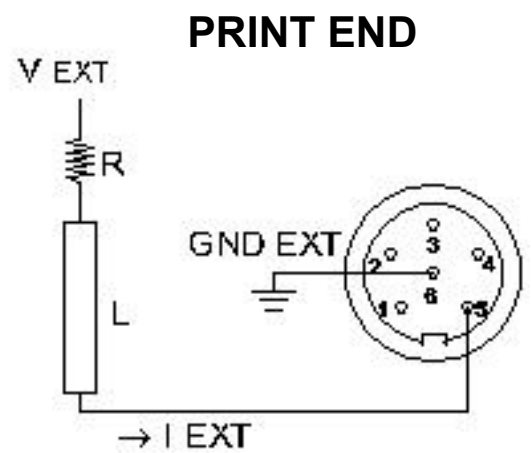
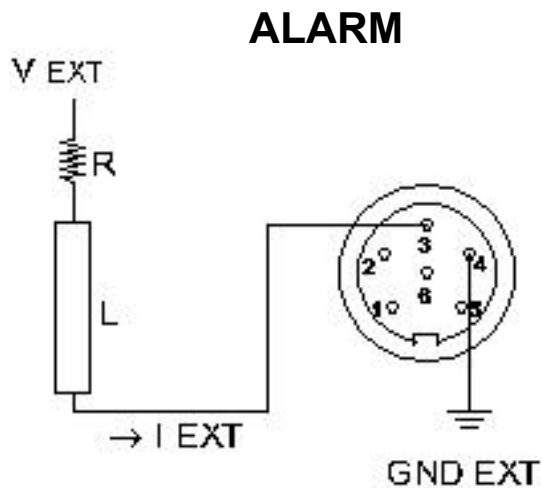
Iext = current on external circuit

R = external circuit resistance

Vext (Volt)	Iext (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

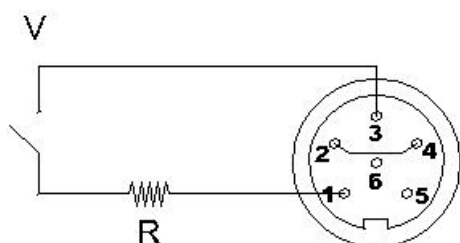
V_{ext} (Volt)	I_{ext} (mA)	$R + L$ (Ohm)
24	10	2400
24	20	1200
24	50	240
12	10	1200
12	20	600
12	50	120
5	10	500
5	20	250
5	50	100

suggested values in **bold**

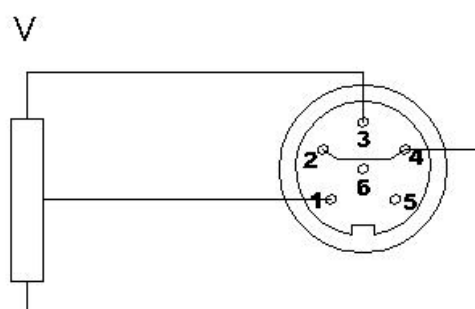
Wiring of I/O signals
Electronic Unit without expansion board
Internal power supply and ground

START PRINT
(soldering side view)

SWITCH



PNP PHOTOCELL



Input signal

V = Internal tension

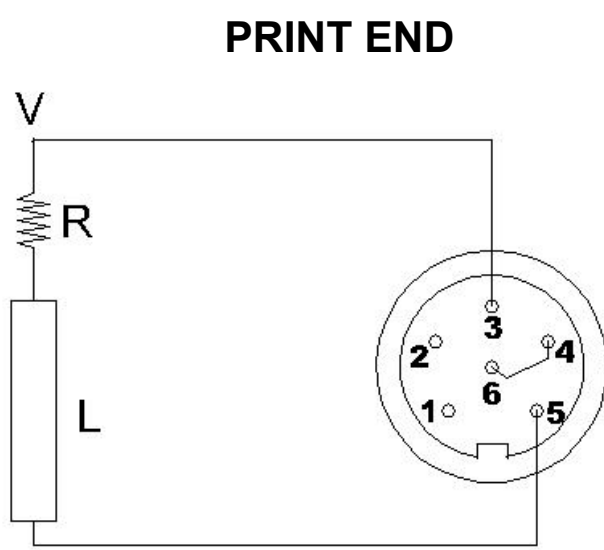
I = current

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)



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**

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