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PICA II

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Carl Valentin GmbH

Postfach 3744
78026 Villingen-Schwenningen
Neckarstraße 78 – 86 u. 94
78056 Villingen-Schwenningen

Phone +49 7720 9712-0
Fax +49 7720 9712-9901

E-Mail info@carl-valentin.de
Internet www.carl-valentin.de

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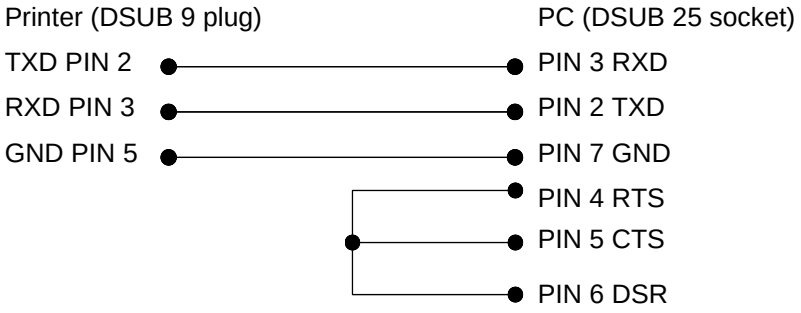
1 Serial Data Transmission

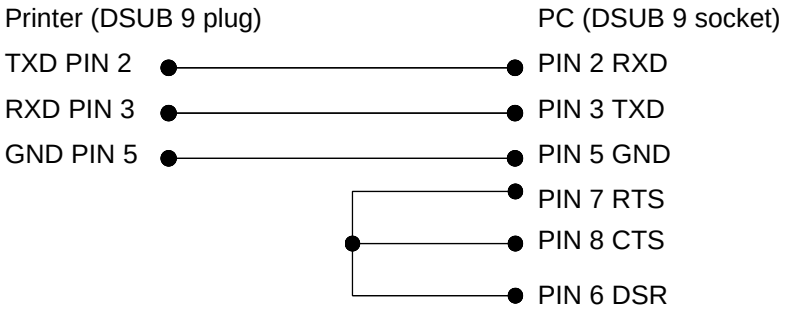
1.1 Connector Assignment (9-pin DSUB socket)

Pin	Signal	Description
2	T x D	Transmitting data line
3	R x D	Receiving data line
5	GND	GND signal
7	CTS	HW Handshake
8	RTS	HW Handshake

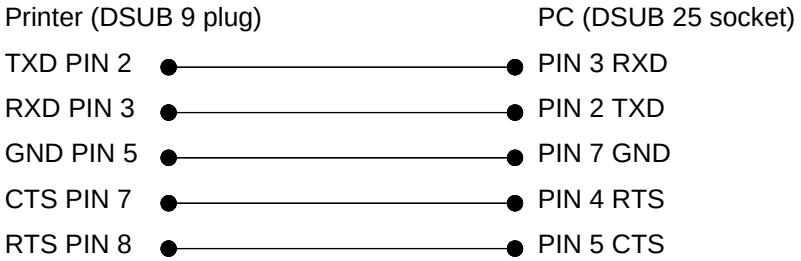
1.2 Connection Plan RS232

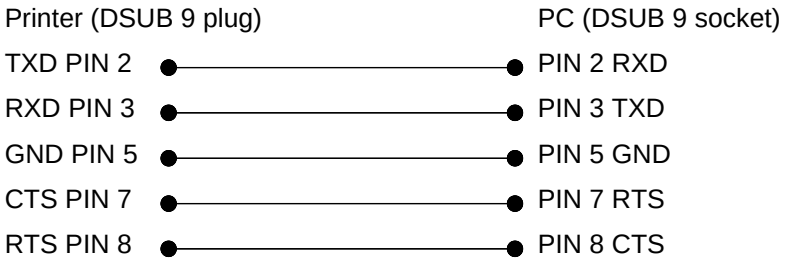
Software Handshake





Hardware Handshake





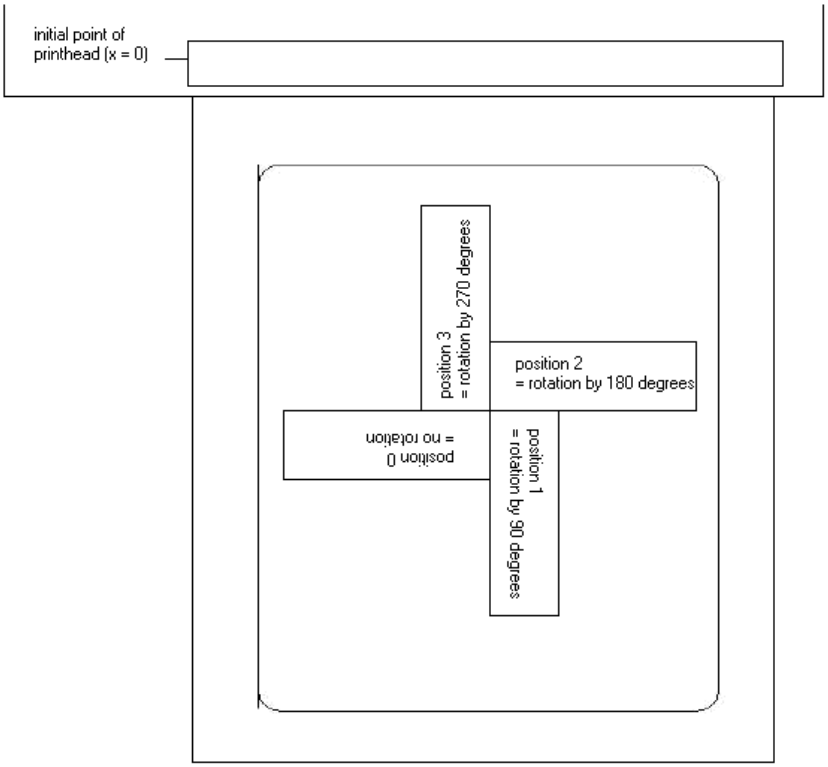
2 Parallel Data Transmission

2.1 Connection Plan

Signal Pin no.	Signal name	Direction	Function
1	$\overline{\text{STROBE}}$	(Input)	The $\overline{\text{STROBE}}$ signal indicates that data can be received. The impulse width to the receiving line has to be 0,5 µs at least.
2	DATA 0	(Input)	The signals are data bits sent to the printer. A HIGH level corresponds to logical 1 and a LOW level to logical 0.
3	DATA 1	(Input)	
4	DATA 2	(Input)	
5	DATA 3	(Input)	
6	DATA 4	(Input)	
7	DATA 5	(Input)	
8	DATA 6	(Input)	
9	DATA 7	(Input)	
10	ACK/	(Output)	An impulse of approx. 12 µs confirms data input for a LOW level and signalises the further listening watch of the printer.
11	BUSY	(Output)	A HIGH level indicates that the printer cannot receive any data. On the following conditions the signal HIGH is possible: 1) for data input (impulse for each sign) 2) during a printing process 3) in Offline status 4) for printer failures
12	PE	(Output)	A HIGH level indicates that paper is used up.
13	SELECT	(Output)	High Online
14	AUTOFEED		
15	FAULT/	(Output)	Signal goes to LOW, in case 1) the paper is used up 2) the printer is Offline or 3) an error occurs.
16	INIT/	(Input)	A LOW level initializes the printer
17	SELECTIN/	(Input)	A LOW level informs the printer to be addressed
18-25	GND		

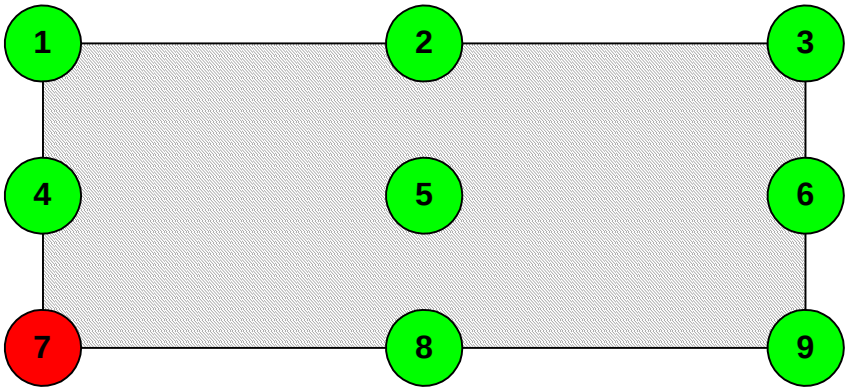
3 Text, Bar Code, Graphic

3.1 Definition of Rotation



3.2 Definition of Datum Point

The so-called datum point is the relation point for indication of position. In the meantime the datum point is also the point at which the selected object is rotated.
To determine the datum point in the mask sets, the possible datum points are numbered from left top (1) to right bottom (9). The default datum point is left bottom (7). This datum point is also used even if no indication is found in the mask set.



4 Data Format

The data format consists of four parties:

- Mask set
- Text
- Graphic
- Command

For a n-line label the following has to be transmitted:

- n - mask sets
- n - text sets
- n - graphic sets (if necessary)
- 1 - command set

NOTICE!

The command set always has to be transmitted at the end!

To each text on a label belong one MASK SET and one TEXT SET with the same field number.

To each code on a label belong one MASK SET, one TEXT SET and one CODE SET with the same field number.

To each box or line on a label belongs only one MASK SET.

To each graphic on a label belong several GRAPHIC SETS according to its size res. height, e.g. a graphic with a height of 10 mm needs 80 graphic sets.

Examples

Label with 3 lines of text:	3 mask sets 3 text sets 1 command set
Label with 2 lines of text, 1 box and 3 lines	6 mask sets 2 text sets 1 command set

For ALL data sets the following is valid:

Each set starts with
SOH = start of header → HEX format 01

Each set ends with
ETB = end of data transmission block → HEX-Format 17

Alternatively, the start character SOH can be set to $5E_{Hex}$, the end character ETB to $5F_{Hex}$. This is necessary if the connected system (e.g. UNIX) cannot transfer control signs.

All other data sets → ASCII format, but they will be transmitted as hexadecimal characters.

Example

A = identification of mask set - transmission: 41_{HEX}

n = field number '01' - transmission: 30_{HEX}, 31_{HEX}

4.1 Explanation

X Coordinate

Distance from right label rim in mm.
Measured from the right label rim up to the lower left point of the corresponding line.

Y Coordintate

Distance from upper label rim in mm.
Measured from the beginning of the label down to the lower left point of the corresponding line.

Bitmap Fonts (not proportional)

01 = Font 01	0,8 x 1,1 mm	127 characters
02 = Font 02	1,2 x 1,7 mm	255 characters
03 = Font 03	1,8 x 2,6 mm	255 characters
04 = Font 04	4,0 x 5,6 mm	127 characters
05 = Font 05	1,8 x 3,2 mm (descender)	255 characters
06 = Font 06	1,5 x 2,9 mm	127 characters
07 = Font 07	1,2 x 2,2 mm (descender)	255 characters

Bitmap Fonts (proportional)

21 = Font 21	(1,0; 13)	255 characters
22 = Font 22	(1,8; 21)	255 characters
23 = Font 23	(2,6; 31)	255 characters
24 = Font 24	(5,6; 67)	255 characters
28 = Font 28	(4,0; 48)	255 characters
29 = Font 29	(0,8; 9)	255 characters

NOTICE!

In order to reach best print results it is recommended always to choose the biggest possible font.

Vector Fonts (proportional)

When in mode 'proportional text', the height and width of text have to be entered in mm.
These values refer to the capital 'M', i.e. the values of other characters are changing in proportion.

Vector Fonts (autoscale)

When in autoscale mode, height and width of text has to be entered in mm.
The height of the text refers to all capital letters. When using small characters and descenders the height is changing in proportion. When entering the width, the complete file has to be considered. The text will be adjusted automatically, which means that the width of the characters is changing.

4.2 Definition of Field Attributes/Properties (Option)

Explanation

Additionally, to mask set 'AM[ ] …' the possibility was created to define further field properties. In order to achieve a high flexibility, the field properties received own names/identifications. Therefore, the sequence as well as the number of field properties is free. If necessary, the mask set 'AC[ ]' is transferred additionally to mask set 'AM[ ]' to the printer.

Structure mask set

(SOH)AC[ ]at1=*value*;at2= *value*;…(ETB)

Attribute (at):	Description
	ITF 14 (see page 22)
BT	Bearer bar type
BW	Bearer bar width
QZ	Quiet zone in 1/100 mm
	Field name (see page 14)
NAME	Definition of field name
	Field number (see page 18)
FN	Free definable field number

This table is constantly extended. The current version is available on demand.

4.3 Field Name

Application (customized)

When label printers are connected to a computer system or machine controls, there is often the requirement that variable data is to be inserted into an existing layout. This data contents come from the superordinate computer system (database) or a machine control (e.g. PLC, scale, ERP system, etc.). Basically, it was always possible to integrate variable data into a 'loaded' layout (mask). The access to certain fields has been effected via the field index, i.e. a consecutive number. This field index is generated by Labelstar Office and can also change with layout changes, whereby the data allocation to the computer system/control is no longer correct.

Exmple

Print data

...

// TEXT (1/100 mm)

(SOH)**AM[1]2405;803;0;1;2;4;1;1;0**(ETB)

(SOH)**BM[1]Feld 1**(ETB)

// TEXT (1/100 mm)

(SOH)**AM[2]421;856;0;1;2;4;1;1;0**(ETB)

(SOH)**BM[2]Feld 2**(ETB)

// LINES: 2

...

The print data contains the definitions for the two text fields. The field index is always in **'[ ]'** of the mask or text setting.

If the text field 'Feld 1' is deleted on the label and then recreated, it gets a new index. In this case '2'. The text field 'Feld 2' gets the index '1'. As a result, an assignment via the field index is used only to a limited extend, without manual post-processing of the layout data.

Explanation

As an alternative to the field index, the assignment can also be made via the field name. A change in the field index has no longer any influence, and a changed layout is still filled in the right places with variable data of the computer system/control system.

Labelstar Office: The print data is supplemented by the following line:

(SOH)**AC[1]NAME="*Field name*"**(ETB)

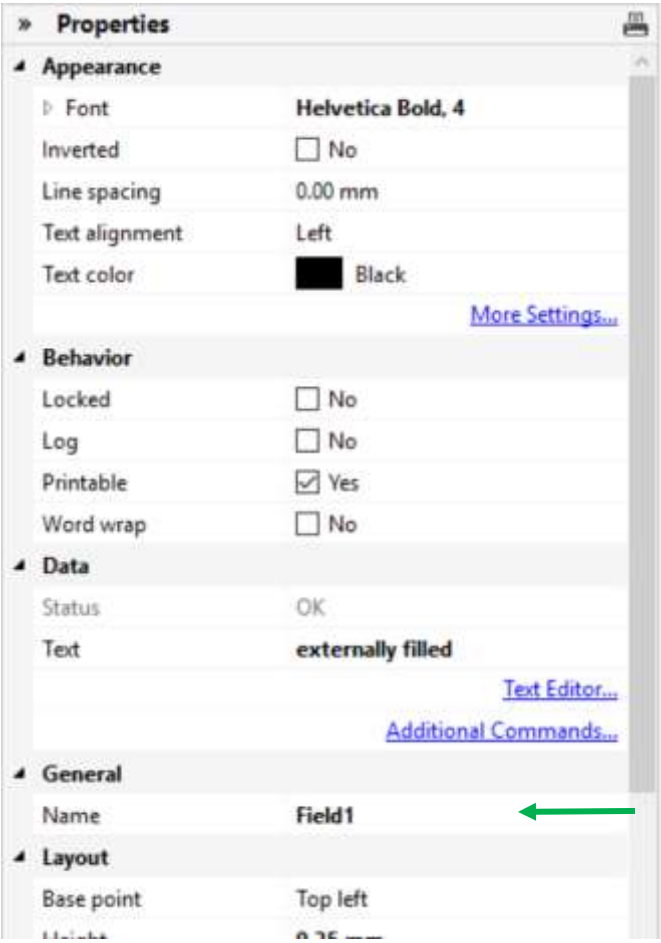
The field content defined via the text block can be changed by the computer system/control with the following command:

(SOH)**BV[*Field name*]Feld 2**(ETB)

This results in the following standard procedure for the connection to a high-level control and/or computer system.

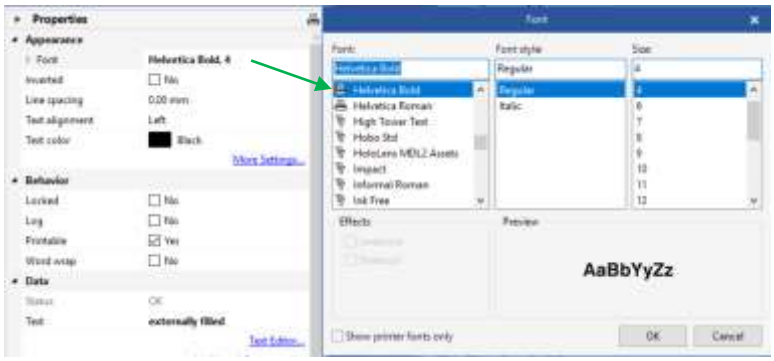
Label design with Labelstar Office

The field names are automatically transferred by Labelstar Office.



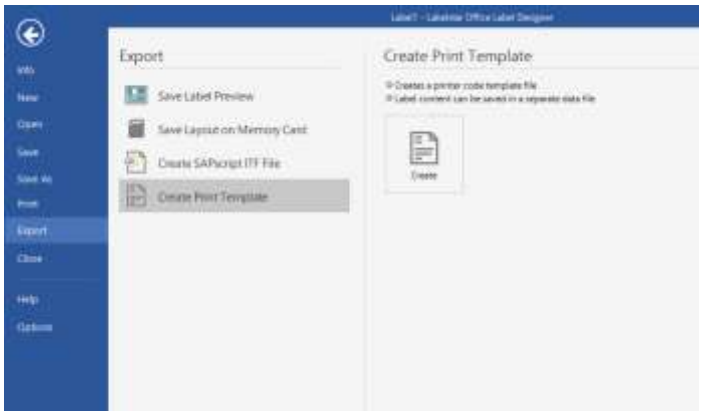
The desired field name (Field1) is entered in the properties of the text field.

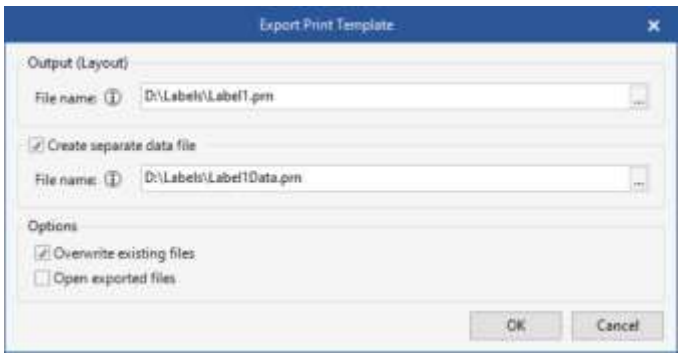
For text fields, a printer-internal font must be used. The printer-internal fonts are marked by a printer symbol in the list.



Export to a print file and save the layout in the external controller

When the label design is finished, the label is exported to a print file. For this, Labelstar Office uses the function **File – Export – Create Print Template**.



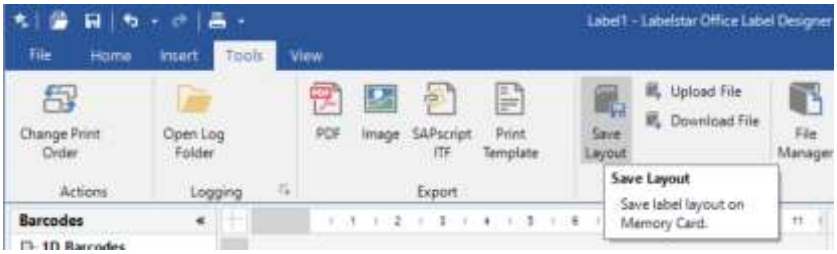


The option **Create separate data file** must be selected, otherwise the line (SOH)**FBC---r--------**(ETB) is included in the print file, which would immediately release a print procedure.

By starting a print procedure, this print file (layout definition / mask definition) is transferred from the controller/computer system to the printer first.

Save the layout on the memory card of the printer

As an alternative to 'Export to a print file' the label layout is saved on the memory card of the printer. For this, the memory card tool from Labelstar Office can be used.



The layout must be called by the controller/computer system **before** filling the variable fields.

The following parameter set is used:

(SOH)**FMA---r*filename***(ETB)

The path name is determined when saving and possibly contains a path.
Example: "A:\Standard\eti1".

Filling the variable fields by the controller/computer system

The higher-level control can select the variable fields by the field names and set the contents. Subsequently, the print job is restarted.

Example

(SOH)**FMB---r*filename***(ETB)	Loading the layout from mc
(SOH)**BV[*ArtBez*]screws**(ETB)	Filling the field "ArtBez" with "screws"
(SOH)**BV[*ArtNr*]123456789**(ETB)	Filling the field "ArtNr" with "132456789"
(SOH)**FBC---r--------**(ETB)	Start printing

4.4 Field Selection by Free Definable Field Number

With the following described attribute it is possible to assign a free definable field number to a field. This field number does not have to be clear, i.e. several fields can have the same field number. In this way the same field contents can be assigned to different fields.

The following attribute identification is defined:

Attribute: **FN**
Description: free definable field number

After the field number was assigned with AC mask statement,

(SOH)AC[n]FN=nr(ETB)

n = field index
nr = free definable field number

it is possible to access to the field and/or the fields with the new BF text statement:

(SOH)BF[nr]text(ETB)

nr = field number
text = field contents

Example

```
// Assignment of field number field 1 and field 2
(SOH)AM[1]1000;2500;0;4;2;7;400;400;0(ETB)
(SOH)AC[1]FN=100(ETB)
(SOH)AM[2]2000;2500;0;30;2;4000;9;3;0;1(ETB)
(SOH)AC[2]FN=100(ETB)

// Access to field 1 and field 2 by field number
(SOH)BF[100]1234567890(ETB)
```

5 Mask Set

5.1 Text

AM[n]y;x;p;a;d;z;dy;dx;lp;dp	
A	identification for mask set
M	identification for protocol version
n	field number
y	Y coordinate in 1/100 mm
x	X coordinate in 1/100 mm
p	identification for phantom field 0 = print 1 = no print
a	identification for field type 1 = bitmap font 2 = bitmap font inverse 4 = vector font 5 = vector font autoscale 6 = vector font inverse 7 = vector font autoscale inverse
d	rotation 0 = 0° 2 = 180° 1 = 90° 3 = 270°
z	**character set not proportional bitmap fonts (1+2)** 01 = FONT 01 0,8 x 1,1 mm 127 characters 02 = FONT 02 1,2 x 1,7 mm 255 characters 03 = FONT 03 1,8 x 2,6 mm 255 characters 04 = FONT 04 4,0 x 5,6 mm 127 characters 05 = FONT 05 1,8 x 3,2 mm - descender 255 characters 07 = FONT 07 1,2 x 2,2 mm - descender 255 characters **character set proportional bitmap fonts (1+2)** 21 = FONT 21 1,0 mm; 13 Pixel 255 characters 22 = FONT 22 1,8 mm; 21 Pixel 255 characters 23 = FONT 23 2,6 mm; 31 Pixel 255 characters 24 = FONT 24 5,6 mm; 67 Pixel 255 characters 28 = FONT 28 4,0 mm; 48 Pixel 255 characters 29 = FONT 29 0,8 mm; 9 Pixel 255 characters **character set vector fonts (4-7)** 01 = Helvetica Bold 02 = Helvetica Bold italics 03 = Helvetica Roman 04 = Helvetica Roman italics 05 = Swiss Light 06 = Swiss Light italics 07 = Baskerville 08 = Baskerville italics 09 = Brush Script 10 = Brush Script italics 11 = Monospace 12 = Monospace italics 17 = OCR-A 18 = OCR-A italics 19 = OCR-B 20 = OCR-B italics

dy	extension in direction Y	
	bitmap fonts	factor 0…9
	vector fonts	character size in 1/100 mm
	vector fonts autoscale	field height
dx	Dehnung in X-Richtung	
	bitmap fonts	factor width
	vector fonts	character size in 1/100 mm
	vector fonts autoscale	field height
lp	distance between single characters in 1/100 mm	
dp	datum point	
	1 = left top	
	2 = centre top	
	3 = right top	
	4 = left centre	
	5 = centre centre	
	6 = right centre	
	7 = left bottom (default)	
	8 = centre bottom	
	9 = right bottom	

5.2 One-Dimensional Bar Code

AM[n]y;x;p;a;d;h;v1;v2;pz;z;dp	
A	identification for mask set
M	identification for protocol version
n	Field number
y	Y position in 1/100 mm
x	X position in 1/100 mm
p	identification for phantom field 0 = print 1 = no print
a	Identification for field type 30 = Code 39 31 = Code 2/5 interleaved 32 = EAN 8 33 = EAN 13 34 = UPC A 35 = UPC E 36 = CODABAR 37 = Code 128 38 = EAN ADD ON 39 = GS1-128 40 = Code 93 41 = PZN 7 42 = 2/5 Industrie 43 = Leitcode 44 = Identcode 46 = Code 39 extended 47 = Code 128 A 48 = Code 128 B 49 = Pharmacode 60 = PZN 8 62 = USPS Intelligent Mail 63 = POSTNET
d	Rotation 0 = 0° 1 = 90° 2 = 180° 3 = 270°
h	symbol height in 1/100 mm
v1	relation 1; module width 'THICK'
v2	relation 2; module width 'THIN' and/or SC factor
pz	check digit calculation 0 = no check digit calculation 1 = check digit calculation 4 = inverse - no check digit calculation 5 = inverse - check digit calculation
z	human readable line 0 = no human readable line 1 = with human readable line
dp	datum point 1 = left top 2 = centre top 3 = right top 4 = left centre 5 = centre centre 6 = right centre 7 = left bottom (default) 8 = centre bottom 9 = right centre

5.3 ITF Bar Code

AM[n]y;x;p;a;d;h;v1;v2;pz;z;dp	
A	identification for mask set
M	identification for protocol version
n	Field number
y	Y position in 1/100 mm
x	X position in 1/100 mm
p	identification for phantom field 0 = print 1 = no print
a	identification for field type 56 = ITF 14
d	rotation 0 = 0° 1 = 90° 2 = 180° 3 = 270°
h	symbol height in 1/100 mm
v1	relation 1; module width 'THICK'
v2	relation 2; module width 'THIN' and/or SC factor
pz	check digit calculation 0 = no check digit calculation 1 = check digit calculation 4 = inverse - no check digit calculation 5 = inverse - check digit calculation
z	human readable line 0 = no human readable line 1 = with human readable line
dp	datum point 1 = left top 2 = centre top 3 = right top 4 = left centre 5 = centre centre 6 = right centre 7 = left bottom (default) 8 = centre bottom 9 = right centre

In order to print the bearer bars of an ITF 14 barcode, the following additional properties for Code 2/5 interleaved must be set:

For this the following field properties are determined:

Property identifier	Description
BT	bearer bar type 0 = no bars 1 = above/below 2 = rectangle
BW	bearer bar width in 1/100 mm
QZ	quiet zone in 1/100 mm

Example

```
// BARCODE (1/100 mm)
(SOH)AM[1]4498;7076;0;31;2;3000;12;4;0;1;3(ETB)
(SOH)AC[1]BT=2;BW=150;QZ=600(ETB)
(SOH)BM[1]1234567890123(ETB)
```

5.4 PDF417

AM[n]y;x;p:a;d;s;rw;rh;ec;z;dp;c;r	
A	identification for mask set
M	identification for protocol version
n	Field number
y	Y position in 1/100 mm
x	X position in 1/100 mm
p	identification for phantom field 0 = print 1 = no print
a	identification for field type 50 = PDF417
d	rotation 0 = 0° 1 = 90° 2 = 180° 3 = 270°
s	symbol size
rw	relation width
rh	relation height
ec	error correction level 0 - ECC Level = 0 1 - ECC Level = 2 2 - ECC Level = 6 3 - ECC Level = 14 4 - ECC Level = 30 5 - ECC Level = 62 6 - ECC Level = 126 7 - ECC Level = 254 8 - ECC Level = 510
z	style 0 = standard 1 = truncated 2 = naked 3 = bare
dp	datum point 1 = left top 2 = centre top 3 = right top 4 = left centre 5 = centre centre 6 = right centre 7 = left bottom (default) 8 = centre bottom 9 = right bottom
c	number of columns 0 = automatic, 1-30
r	number of rows 0 = automatic, 3-90

5.5 MAXICODE

AM[n]y;x;p;a;d;0;sn;ns;m;0;dp	
A	identification for mask set
M	identification for protocol version
n	field number
y	Y position in 1/100 mm
x	X position in 1/100 mm
p	identification for phantom field 0 = print 1 = no print
a	identification for field type 51 = MAXICODE
d	rotation 0 = 0° 1 = 90° 2 = 180° 3 = 270°
0	dummy
sn	symbol number
ns	quantity of symbols
m	mode 2 = Structured Message (US Carrier) 3 = Structured Message (International Carrier) 4 = Default message
0	dummy
dp	datum point 1 = left top 2 = centre top 3 = right top 4 = left centre 5 = centre centre 6 = right centre 7 = left bottom (default) 8 = centre bottom 9 = right bottom

5.6 DataMatrix

AM[n]y;x;p;a;d;s;aw;ah;ec;f;dp	
A	identification for mask set
M	identification for protocol version
n	field number
y	Y position in 1/100 mm
x	X position in 1/100 mm
p	identification for phantom field 0 = print 1 = no print
a	identification for field type 52 = DataMatrix
d	rotation 0 = 0° 1 = 90° 2 = 180° 3 = 270°
s	symbol size in 1/100 mm
aw	relation width
ah	relation height
ec	Error Correction 0 - ECC Type = 0 ECC Level = 0 Overhead = 0 % 1 - ECC Type = 2* ECC Level = 40 Overhead = 33 % 2 - ECC Type = 3 ECC Level = 50 Overhead = 25 % 3 - ECC Type = 6 ECC Level = 80 Overhead = 33 % 4 - ECC Type = 8 ECC Level = 100 Overhead = 50 % 5 - ECC Type = 9* ECC Level = 110 Overhead = 75 % 6 - ECC Type = 10* ECC Level = 120 Overhead = 50 % 7 - ECC Type = 11* ECC Level = 130 Overhead = 67 % 8 - ECC Type = 12 ECC Level = 140 Overhead = 75 % 9 - ECC Type = 26 ECC Level = 200 Overhead = 0 %
f	format ID of data 0 - Format ID = 11 (numeric, 2000 characters)* 1 - Format ID = 1 (numeric, 500 characters) 2 - Format ID = 2 (alphabetical, 500 characters) 3 - Format ID = 3 (alphabetical + pointers, 500 characters) 4 - Format ID = 4 (alphanumeric, 500 characters) 5 - Format ID = 5 (7 Bit, 500 characters) 6 - Format ID = 6 (8 Bit, 500 characters) 7 - Format ID = 7 (pre-programmed, 500 characters)* 8 - Format ID = 12 (alphabetical, 2000 characters) 9 - Format ID = 14 (alphanumeric, 2000 characters)
dp	datum point 1 = left top 2 = centre top 3 = right top 4 = left centre 5 = centre centre 6 = right centre 7 = left bottom (default) 8 = centre bottom 9 = right bottom

* not supported from printer

5.7 GS1 DataMatrix

AM[n]y;x;p;a;d;s;aw;ah;ec;f;dp	
A	identification for mask set
M	identification for protocol version
n	field number
y	Y position in 1/100 mm
x	X position in 1/100 mm
p	identification for phantom field 0 = print 1 = no print
a	identification for field type 59 = GS1 DataMatrix
d	rotation 0 = 0° 1 = 90° 2 = 180° 3 = 270°
s	symbol size in 1/100 mm
aw	relation width
ah	relation height
ec	Error Correction 0 - ECC Type = 0 ECC Level = 0 Overhead = 0 % 1 - ECC Type = 2* ECC Level = 40 Overhead = 33 % 2 - ECC Type = 3 ECC Level = 50 Overhead = 25 % 3 - ECC Type = 6 ECC Level = 80 Overhead = 33 % 4 - ECC Type = 8 ECC Level = 100 Overhead = 50 % 5 - ECC Type = 9* ECC Level = 110 Overhead = 75 % 6 - ECC Type = 10* ECC Level = 120 Overhead = 50 % 7 - ECC Type = 11* ECC Level = 130 Overhead = 67 % 8 - ECC Type = 12 ECC Level = 140 Overhead = 75 % 9 - ECC Type = 26 ECC Level = 200 Overhead = 0 %
f	format ID of data 0 - Format ID = 11 (numeric, 2000 characters)* 1 - Format ID = 1 (numeric, 500 characters) 2 - Format ID = 2 (alphabetical, 500 characters) 3 - Format ID = 3 (alphabetical + pointers, 500 characters) 4 - Format ID = 4 (alphanumeric, 500 characters) 5 - Format ID = 5 (7 Bit, 500 characters) 6 - Format ID = 6 (8 Bit, 500 characters) 7 - Format ID = 7 (pre-programmed, 500 characters)* 8 - Format ID = 12 (alphabetical, 2000 characters) 9 - Format ID = 14 (alphanumeric, 2000 characters)
dp	datum point 1 = left top 2 = centre top 3 = right top 4 = left centre 5 = centre centre 6 = right centre 7 = left bottom (default) 8 = centre bottom 9 = right bottom

* not supported from printer

5.8 CODABLOCK F

AM[n]y;x;p;a;d;h;nc;nl;m;s;dp	
A	identification for mask set
M	identification for protocol version
n	field number
y	Y position in 1/100 mm
x	X position in 1/100 mm
p	identification for phantom field 0 = printout 1 = np printout
a	identification for field type 53 = CODABLOCK F
d	rotation 0 = 0° 1 = 90° 2 = 180° 3 = 270°
h	line height in symbol
nc	quantity of characters/line
nl	quantity of lines
m	mode
s	module size
dp	datum point 1 = left top 2 = centre top 3 = right top 4 = left centre 5 = centre centre 6 = right centre 7 = left bottom (default) 8 = centre bottom 9 = right bottom

5.9 GS1 DataBar (RSS Code)

AM[n]y;x;p;a;d;s;m;k;t;0;dp	
A	identification for mask set
M	identification for protocol version
n	field number
y	Y position in 1/100 mm
x	X position in 1/100 mm
p	identification for phantom field 0 = print 1 = no print
a	identification for field type 54 = GS1 DataBar (RSS)
d	rotation 0 = 0° 1 = 90° 2 = 180° 3 = 270°
s	number of segments per line [2…22]
m	module width [1 …12]
k	separator height [1,2]
t	symbol type 1 = GS1 DataBar Omnidirectional (RSS-14) 2 = GS1 DataBar Truncated (RSS-14 Truncated) 3 = GS1 DataBar Stacked (RSS-14 Stacked) 4 = GS1 DataBar Stacked Omnidirectional (RSS-14 Stacked Omnidirectional) 5 = GS1 DataBar Limited (RSS Limited) 6 = GS1 DataBar Expanded (RSS Expanded)
0	not used
dp	datum point 1 = left top 2 = centre top 3 = right top 4 = left centre 5 = centre centre 6 = right centre 7 = left bottom (default) 8 = centre bottom 9 = right bottom

5.10 QR Code

AM[n]y;x;p;a;d;mo;cs;ms;cw;ec;dp	
A	identification for mask set
M	identification for protocol version
n	field number
y	Y position in 1/100 mm
x	X position in 1/100 mm
p	identification for phantom field 0 = print 1 = no print
a	identification for field type 57 = QR Code
d	rotation 0 = 0° 1 = 90° 2 = 180° 3 = 270°
mo	code model 1 = Code Model 1 2 = Code Model 2
cs	character set N = numeric A = alphanumeric B = 8-bit byte K = kanji
ms	masking -1 = auto 0-7 = mask x 8 = no masking
cw	line width in 1/100 mm per module possible values: 0-800
ec	error correction (restoring capacity) L = 7 % M = 15 % Q = 25 % H = 30 %
dp	datum point 1 = left top 2 = centre top 3 = right top 4 = left centre 5 = centre centre 6 = right centre 7 = left bottom (default) 8 = centre bottom 9 = right bottom

5.11 Aztec Code

AM[n]y;x;p;a;d;h;f;ec;m;0;dp	
A	identification for mask set
M	identification for protocol version
n	field number
y	Y position in 1/100 mm
x	X position in 1/100 mm
p	identification for phantom field 0 = print 1 = no print
a	identification for field type 61 = Aztec Code
d	rotation 0 = 0° 1 = 90° 2 = 180° 3 = 270°
h	symbol size in 1/100 mm (max 1 cm)
f	format 0 = Auto 1 = C15xC15 Compact 2 = C19xC19 Compact 3 = C23xC23 Compact 4 = C27xC27 Compact 5 = C19xC19 6 = C23xC23 7 = C27xC27 8 = C31xC31 9 = C37xC37 10 = C41xC41 11 = C45xC45 12 = C49xC49 13 = C53xC53 14 = C57xC57 15 = C61xC61 16 = C67xC67 17 = C71xC71 18 = C75xC75 19 = C79xC79 20 = C83xC83 21 = C87xC87 22 = C91xC91 23 = C95xC95 24 = C101xC101 25 = C105xC105 26 = C109xC109 27 = C113xC113 28 = C117xC117 29 = C121xC121 30 = C125xC125 31 = C131xC131 32 = C135xC135 33 = C139xC139 34 = C143xC143 35 = C147xC147 36 = C151xC151
ec	error correction (only if format = 0) 1 = 10 % 2 = 23 % 3 = 36 % 4 = 50 %
m	mode 0 = data 1 = runes (figures 0-255) 2 = Unicode (8 Bit ASCII) 3 = GS1 (not yet available)
0	dummy
dp	datum point 1 = left top 2 = centre top 3 = right top 4 = left centre 5 = centre centre 6 = right centre 7 = left bottom (default) 8 = centre bottom 9 = right bottom

5.12 Rectangle

AM[n]y;x;p;a;h;b;s;m;dp	
A	identification for mask set
M	identification for protocol version
n	field number
y	Y position in 1/100 mm
x	X position in 1/100 mm
p	identification for phantom field 0 = print 1 = no print
a	identification for field type 10 = rectangle
h	rectangle height in 1/100 mm
b	rectangle height in 1/100 mm
s	line width in 1/100 mm
m	line type; 1 digit
dp	datum point 1 = left top 2 = centre top 3 = right top 4 = left centre 5 = centre centre 6 = right centre 7 = left bottom (default) 8 = centre bottom 9 = right bottom

5.13 Line

AM[n]y;x;p;a;d;l;s;m;dp	
A	identification for mask set
M	identification for protocol version
n	field number
y	Y position in 1/100 mm
x	X position in 1/100 mm
p	identification for phantom field 0 = printout 1 = no printout
a	identification for field type 11 = line
d	rotation 0 = horizontal 1 = vertical
l	length in 1/100 mm
s	line width in 1/100 mm
m	line type; 1 digit
dp	datum point 1 = left top 2 = centre top 3 = right top 4 = left centre 5 = centre centre 6 = right centre 7 = left bottom (default) 8 = centre bottom 9 = right bottom

5.14 Internal Graphic

AM[n]y;x;p;a;d;dy;dx;dp	
A	identification for mask set
M	identification for protocol version
n	field number
y	Y position in 1/100 mm
x	X position in 1/100 mm
p	identification for phantom field 0 = print 1 = no print
a	identification for field type 3 = internal graphic
d	rotation 0 = 0° 1 = 90° 2 = 180° 3 = 270°
dy	rotation in direction Y
dx	rotation in direction X
dp	datum point 1 = left top 2 = centre top 3 = right top 4 = left centre 5 = centre centre 6 = right centre 7 = left bottom (default) 8 = centre bottom 9 = right bottom

6 Text Set

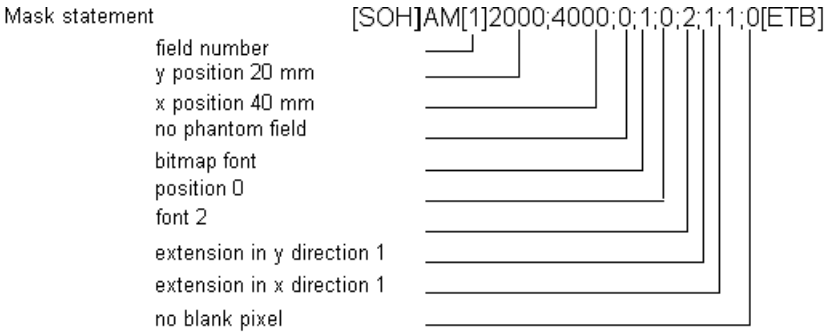
BM[n]text	
B	identification for text set
M	identification for extended protocol
n	field number
text	data contents, text

BV[n]text	
B	identification for text set
V	identification for selection by field name
n	field name
text	data contents, text

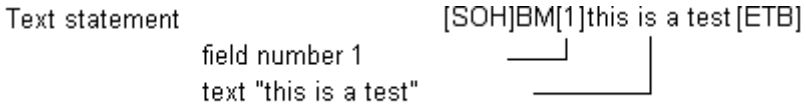
BF[n]text	
B	identification for text set
F	identification for selection by free definable field number
n	field number
text	data contents, text

6.1 Examples

Mask set



Texts set



Text set with variable definition: [SOH]BM[125]=CN(0,0,3,1,1)000[ETB]

Example label

ASCII data	Identification
⊗AM[1]3600;4600;0;33;0;1500;0;4;1;1⊕ $^{C}_{R}$ $^{L}_{F}$	mask set for bar code
⊗BM[1]444444444444⊕ $^{C}_{R}$ $^{L}_{F}$	appropriate text set
⊗AM[2]600;4700;0;4;0;1;300;200;24⊕ $^{C}_{R}$ $^{L}_{F}$	five mask sets vector font / proportional font
⊗AM[3]600;3100;0;4;0;1;400;300;24⊕ $^{C}_{R}$ $^{L}_{F}$	
⊗AM[4]1100;4700;0;4;0;1;400;300;24⊕ $^{C}_{R}$ $^{L}_{F}$	
⊗AM[5]1800;4700;0;4;0;1;300;200;24⊕ $^{C}_{R}$ $^{L}_{F}$	
⊗AM[6]1900;3700;0;4;0;1;600;400;24⊕ $^{C}_{R}$ $^{L}_{F}$	
⊗BM[2]Art.Nr. ⊕ $^{C}_{R}$ $^{L}_{F}$	five appropriate text sets
⊗BM[3]44444⊕ $^{C}_{R}$ $^{L}_{F}$	
⊗BM[4]Artikelbezeichnung⊕ $^{C}_{R}$ $^{L}_{F}$	
⊗BM[5]DM⊕ $^{C}_{R}$ $^{L}_{F}$	
⊗BM[6]99,-- ⊕ $^{C}_{R}$ $^{L}_{F}$	
⊗FBA000r06000000⊕	number of lines
⊗FBBA00r00001000⊕	number of items
⊗FBC000r00000000⊕	start

: graphic data in PCX format
⊗: SOH (1_{hex} bzw $5E_{hex}$)
⊕: ETB (17_{hex} bzw. $5F_{hex}$)
$^{C}_{R}$: CarrigeReturn ($0D_{hex}$)
$^{L}_{F}$: LineFeed ($0A_{hex}$)

7 Graphic Set

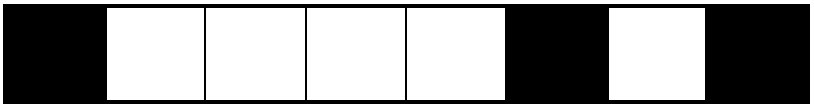
7.1 General Graphic Format

This format is supported by all our printers but note that a 8 bit transmission is absolute necessary.

SOH	D	p	p	p	p	lb	lb	lb	b	b	b	gb……	ETB

			min.	max.
D	=	identification for graphic set		
p	=	pixel line from above	'0000'	'1900'
lb	=	1. byte from left	'000'	'100'
b	=	quantity of bytes	'1'	'100'
gb	=	graphic bytes		

Graphic byte



1 graphic bit = 0,083 x 0,083 mm

7.2 Graphic in PCX Format

It is possible to transfer graphic data as a PCX-file (e.g. PaintBrush) to the printer. With this type of data transfer the PCX-file is transferred in a compressed form. Hereby the RLE-procedure is used and therefore the graphic data were reduced by approx. 30 %. This means that the effective transferring time for 300 dpi printers is cut in halves.

To set the printer ready for receiving PCX-data the protocol has to be switched over and hereby the following command set will be defined:

SOH	A	X	n	n	n	y	y	y	y	y	y	x	x	x	x	x	x	m	dp	ETB

n	Index of transferred graphic to printer internal maintenance at present not processed (000)
y	Y coordinate of graphic in 1/100 mm
x	X coordinate of graphic in 1/100 mm
m	Mode 0 = standard (background is overwritten) Mode 1 = transparency (background is maintained) Mode 2 = inverse (background is overwritten) Mode 3 = inverse transparency (background is maintained)
dp	datum point 1 = left top 2 = centre top 3 = right top 4 = left centre 5 = centre centre 6 = right centre 7 = lleft bottom (default) 8 = centre bottom 9 = right bottom

- It is recommended to observe that directly after the final sign (ETB) no separator res. fill character such as $^{C}{}_{R}\,{}^{L}{}_{F}$ is indicated.
- The printer supports the following PCX versions: 5, 3, 2 and 0.
- It is necessary that the corresponding PCX-file is available as monochrome (black/white).
- The graphic has to be available in the original size as the printer is not able to change the size by itself.

NOTICE!

Before print start, indicated by parameter set 'FBC', the definition of field number, lines and pieces has to be effected via the parameter sets (FBA res. FBB).

7.3 Example: PCX File

-*** PCX_GRAPHIC-INFO ***-

⊗AX0010015300100941⊕##

⊗AM[1]3600;4600;0;33;0;1500;0;4;1;1⊕ $^{C}{}_{R}\,{}^{L}{}_{F}$	mask set for bar code
⊗BM[1]444444444444⊕ $^{C}{}_{R}\,{}^{L}{}_{F}$	appropriate text set
⊗AM[2]600;4700;0;4;0;1;300;200;24⊕ $^{C}{}_{R}\,{}^{L}{}_{F}$ ⊗AM[3]600;3100;0;4;0;1;400;300;24⊕ $^{C}{}_{R}\,{}^{L}{}_{F}$ ⊗AM[4]1100;4700;0;4;0;1;400;300;24⊕ $^{C}{}_{R}\,{}^{L}{}_{F}$ ⊗AM[5]1800;4700;0;4;0;1;300;200;24⊕ $^{C}{}_{R}\,{}^{L}{}_{F}$ ⊗AM[6]1900;3700;0;4;0;1;600;400;24⊕ $^{C}{}_{R}\,{}^{L}{}_{F}$	five mask set vector font / proportional font
⊗BM[2]Art.Nr. ⊕ $^{C}{}_{R}\,{}^{L}{}_{F}$ ⊗BM[3]44444⊕ $^{C}{}_{R}\,{}^{L}{}_{F}$ ⊗BM[4]Artikelbezeichnung⊕ $^{C}{}_{R}\,{}^{L}{}_{F}$ ⊗BM[5]DM⊕ $^{C}{}_{R}\,{}^{L}{}_{F}$ ⊗BM[6]99,-- ⊕ $^{C}{}_{R}\,{}^{L}{}_{F}$	five appropriate text sets
⊗FBA00r06000000⊕ ⊗FBBA00r00001000⊕ ⊗FBC000r00000000⊕	set number of lines (FBA…) set quantity (FBBA…) start print order (FBC…)

: graphic data in PCX format
⊗: SOH (1_{hex} bzw $5E_{hex}$)
⊕: ETB (17_{hex} bzw. $5F_{hex}$)
$^{C}{}_{R}$: CarrigeReturn ($0D_{hex}$)
$^{L}{}_{F}$: LineFeed ($0A_{hex}$)

8 Variables

8.1 Set Format

SOH	BM	[n]	=	v	v	(	p1	p2	p…	pn	)	t1	t2	t…	t70	ETB

=	start of function
vv	variable type
	SC link field
	CN counter
	CC extended counter
	CL date/time
	CU currency variable
	SH shift variable
	MD memory card data
(	start of variable parameter block
p1…pn	variable parameter
)	end of variable parameter block

NOTICE!

In case you want to print a text which corresponds exactly to the variable definition then you have to place '!' before.

SOH	BM	[n]	!	=	v	v	(	p1	p2	p…	pn	)	t1	t2	t…	t70	ETB

8.2 Link Field

SOH	BM	[n]	=	S	C	(	p1	;	p2	;	p…	;	pn	)	t1	t2	t…	t70	ETB

= SC	identification of link field
p1…pn	identification of link elements (field number or constant text) field number is entered without leading '0' constant text is included in " but these marks are not printed

NOTICE!

Reference fields can be constant text or variables but no link fields.

Example

=SC(1;2;3) --> Printout: Field1Field2Field3

=SC(1;“constant“;2) --> Printout: Field1constantField2

8.3 Counter

SOH	BM	[n]	=	C	N	(	t	;	m	;	c	;	+/-	s	;	i	;	h	;	r	)	t1	t2	t…	t70	ETB

= CN identification counter

t type of counter
- 0 numerical
- 1 letters only
- 2…36 radix, base of the counter

m function mode
- 0 standard
- 1 return to start value
- 2 enter the start value at the beginning of printing (default = existing start value)
- 3 enter the start value at the beginning of printing (default = last final number)
- 4 reset start value at cycle end (only for DPM IIIi)
- 5 reset start value by I/O signal
- 6 time-controlled resetting
- 7 time-controlled resetting with input of initial value (default = last final value)

c digit where the numbering starts counting

+/− direction
- + adding
- − subtracting

s step width

i update interval
(number of labels with identical number)

h time by which the counter is reset (function mode 6 and 7) in format 'HH:MM'
e.g. 00:00 = reset counter at 0:00
(optional, only for function mode 6 and 7)

r reset value
(optional, only for function mode 6 and 7; default = text and/or initial value)
Limitation:
The time-controlled resetting of counter variable is only effected in case of an active print order. If a print order is cancelled before the specified time and afterwards again restarted then no resetting of counter value is effected.

t1, t2, … text res. start value of counter

<u>Example:</u>

Input: =CN(10;7;4;+1;1;06:00;0001)1234

The enquiry for the initial value is effected at print start and at 6:00 the counter variable is reset to value 0001.

8.4 Extended Counter

SOH	BM	[n]	=	C	C	(	+/-	s	;	i	;	m	;	z	;	n	;	x	)	t	ETB

= CC identification of numeric counter

+/− direction
- + counter adding
- − counter subtracting

s step width

i update interval
(number of labels with identical number)

m function mode
- 0 standard
- 1 return to start value
- 2 enter the start value at the beginning of printing (default = existing start value)
- 3 enter the start value at the beginning of printing (default = last final number)
- 4 reset start value at cycle end (only for DPM IIIi)
- 5 set min. / max. value
- 6 set start value
- 7 print end

z leading zeros
- 0 no leading zeros
- 1 printout with leading zeros

n minimum value (max. -999999999)

x maximum value (max. 999999999)

t start value
(the number of digits determines the format for the printout with leading zeros
(max. 999999999)

<u>Example:</u>

Input: =CC(+1;2;5;0;1,999)0050

Printout: 50, 51,…999, 1, 2, …

8.5 Date and Time

`SOH BM [n] =CL(m;d;i;n;c;mo;pd;pm;md;mm;rw;ws) t1 t… t70 ETB`

= CL	identification date/time
m	month offset to the actual date
d	day offset to the actual date
i	update interval (0 = at the beginning of a print order, 1 = each label)

Optional parameters

n	minute offset ot the actual time (negative entry/value possible)
c	correction month overflow (0 = change to the next month, 1 = remain in current month)

Optional parameters for rounded date

rw	rounded weekday: 1 = Sunday … 7 = Saturday; 0 = no rounding
ws	start of week, format: "D-HH:MM", e.g. 1-00:00 = Sunday, 0:00 Uhr

Example

Actual date as per Real Time Clock: 08.12.

Input: =CL(0;0;0)<DD.MO.YY> Printout:08.12.
Input: =CL(2;1;0)<DD.MO.YY> Printout:09.02.

Example for rounded date

The beginning of the week is on Sunday (08.12.) at 00:00. The date of Monday should be printed the whole week.

Input: =CL(0;0;0;0;0;0;0;0;0;0;2;1-00:00)<DD.MO.>

Current date	Rounded date
07.12. 23:59:59	02.12.
08.12. 00:00:00	09.12.
09.12.	09.12.
14.12. 23:59:59	09.12.
15.12. 00:00:00	16.12.

8.6 Format Identifier (Date/Time)

Standard format	
HH	Hours 2-digit (24 hours)
HE	**Hours 2-digit (12 hours)**
MI	Minutes 2-digit
SS	Seconds 2-digit
AM	**AM/PM output**
DD	Day 2-digit
MO	Month 2-digit
YYYY	Year 4-digit
YY	Year 2-digit
Y	Year 1-digit
WW	Calendar week
DW	Day of week (Sunday = 0)
DW1	Day of week (Sunday = 1)
DwX	Day of week An arbitrary ASCII character can be used for x, from which it is counted consecutively
DOWxxxxxxx	Day of week - variable For x, any ASCII character can be used. The first ‚x‘ denominates Sunday, the next denominates Monday and so on until Saturday For each weekday a character must be created
DOY	Day of year 3-digit (First January = 1)
DY	Day of year 3-digit (First January = 0)
Examples	
DD.MO.YY	22.01.10
MO/DD/YYYY	01/22/2010
YY-MO-DD	10-01-22
YYMODD	100122

The format identifier 'HE' and 'AM'/'am'/'Am' are supplemented. Therefore the output of hours in 12-hours mode is possible. By the additional output of format identifier 'AM' the output of time in american/english format is possible.

Example

=CL(0;0;0;0)<HH:MI:SS> --> 15:30:00
=CL(0;0;0;0)<HE:MI:SS> --> 03:30:00
=CL(0;0;0;0)<HE:MI:SS AM> --> 03:30:00 PM
=CL(0;0;0;0)<HE:MI:SS am> --> 03:30:00 pm
=CL(0;0;0;0)<HE:MI:SS Am> --> 03:30:00 p.m.

By separating the output of time and AM/PM output in 2 text fields, also the following output format is possible:
--> 03:30:00 pm

Extended format	
XMO	Name of month short
XSO	Name of month long
XSD	Weekday short
XLD	Weekday long
For X you can enter the country identification of desired language	
C = Canadian D = Danish E = English F = French G = German I = Italian N = Dutch O = Norwegian S = Spanish U = Finnish W = Swedish	
Examples:	
DD.EMO.YY	22.JAN.10
DD.ESO YYYY	22. January 2010
ELD,DD.GMO.YY	Friday, 22. JAN.10
ESD,DD.MO.YY	FR, 22.01.10

Extended format - XMO

C	JA	FE	MR	AL	MA	JN	JL	AU	SE	OC	NO	DE
D	JAN	FEB	MAR	APR	MAJ	JUN	JUL	AUG	SEP	OKT	NOV	DEC
E	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
F	JAN	FEV	MAR	AVR	MAI	JUIN	JUIL	AOU	SEP	OCT	NOV	DEC
G	JAN	FEB	MRZ	APR	MAI	JUN	JUL	AUG	SEP	OKT	NOV	DEZ
I	GEN	FEB	MAR	APR	MAG	GIU	LUG	AGO	SET	OTT	NOV	DIC
N	JAN	FEB	MRT	APR	MEI	JUN	JUL	AUG	SEP	OKT	NOV	DEC
O	JAN	FEB	MAR	APR	MAI	JUN	JUL	AUG	SEP	OKT	NOV	DES
S	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC
U	TAM	HEL	MAA	HUH	TOU	KES	HEI	ELO	SYY	LOK	MAR	JOU
W	JAN	FEB	MAR	APR	MAJ	JUN	JUL	AUG	SEP	OKT	NOV	DEC

Extended format - XSO

C	January	February	March	April	May	June
D	Januar	Februar	Marts	April	Maj	Juni
E	January	February	March	April	May	June
F	Janvier	Février	Mars	Avril	Mai	Juin
G	Januar	Februar	Maerz	April	Mai	Juni
I	Gennaio	Febbraio	Marzo	Aprile	Maggio	Giugno
N	Januari	Februari	Maart	April	Mei	Juni
O	Januar	Februar	Mars	April	Mai	Juni
S	Enero	Febrero	Marzo	Abril	Mayo	Junio
U	Tammikuu	Helmikuu	Maaliskuu	Huhtikuu	Toukokuu	Kesaekuu
W	Januari	Februari	Mars	April	Maj	Juni

C	July	August	September	October	November	December
D	Juli	August	September	Oktober	November	December
E	July	August	September	October	November	December
F	Juillet	Août	Septembre	Octobre	Novembre	Décembre
G	Juli	August	September	Oktober	November	Dezember
I	Luglio	Agosto	Settembre	Ottobre	Novembre	Dicembre
N	Juli	Augustus	September	Oktober	November	December
O	Juli	August	September	Oktober	November	Desember
S	Julio	Agosto	Septiembre	Octubre	Noviembre	Diciembre
U	Heinaekuu	Elokuu	Syyskuu	Lokakuu	Marraksuu	Joulukuu
W	Juli	Augusti	September	Oktober	November	December

Extended format - XSD

C	SUN	MON	TUE	WED	THU	FRI	SAT
D	SO	MA	TI	ON	TO	FR	LO
E	SUN	MON	TUE	WED	THU	FRI	SAT
F	DIM	LUN	MAR	MER	JEU	VEN	SAM
G	SO	MO	DI	MI	DO	FR	SA
I	DOM	LUN	MAR	MER	GIO	VEN	SAB
N	ZO	MA	DI	WO	DO	VR	ZA
O	SO	MA	TI	ON	TO	FR	LO
S	DOM	LUN	MAR	MIE	JUE	VIE	SAB
U	SU	MA	TI	KE	TO	PE	LA
W	SO	LA	TI	ON	TO	FR	LO

Extended format - XLD

C	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
D	Søndag	Mandag	Tirsdag	Onsdag	Torsdag	Fredag	Lørdag
E	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
F	Dimanche	Lundi	Mardi	Mercredi	Jeudi	Vendredi	Samedi
G	Sonntag	Montag	Dienstag	Mittwoch	Donnerstag	Freitag	Samstag
I	Domenica	Lunedi	Martedi	Mercoledi	Giovedi	Venerdi	Sabato
N	Zondag	Maandag	Dinsdag	Woensdag	Donderdag	Vrijdag	Zaterdag
O	Søndag	Mandag	Tirsdag	Onsdag	Torsdag	Fredag	Lørdag
S	Domingo	Lunes	Martes	Miércoles	Jueves	Viernes	Sábado
U	Sunnuntai	Maanantai	Tiistai	Keski-viikko	Torstai	Perjantai	Lauantai
W	Söndag	Måndag	Tisdag	Onsdag	Torsdag	Fredag	Lördag

8.7 Currency Variable

SOH	BM	[n]	=	C	U	(	a	;	b	;	c	;	d	;	e	;	f	;	g	)	t1	t2	t…	t70	ETB

= CU	Signification of variable Euro	
a	ANSI-Code of thousand separator as decimal figure	
b	ANSI-Code of comma separator as decimal figure	
c	Quantity of numbers after the comma as decimal figure	
d	Operand A	Before the processing the variable Euro calculates the term
e	Operand B	
f	Operand C	$\frac{A \times B}{C}$
g	Rounding format	
t1, t2, …	Format string, is indicated by "< >"	

Example:

In case the contents of field 20 has to be converted from USD into EUR the definition of variable for the user defined format is as follows:

B01 '=CU(46;44;2;20;"1,0";"0,68861";"0,01")Ergebnis: <>Euro'
B20 1.250,44 USD

Printout: 1.250,44 USD
Result: 1.815,89 Euro*

* 1 USD = 0,68861 Euro (January 11, 2010)

8.8 Shift Variable

SOH	BM	[n]	=	S	H	(	)	t1	t2	t…	t70	ETB

= SH identification of shift variable

NOTICE!

The shift variable did not need any parameters. The settings for the output are defined with the corresponding parameter sets (see above).

Example

The shift times are defined: 00:00 - 11:59 "Shift1"
12:00 - 23:59 "Shift2"

=SH() Printout at 10:00 Uhr: "Shift1"
=SH() Printout at 13:00 Uhr: "Shift2"

Set shift times

SOH	F	C	I	D	-	-	r	N	N	H	H	M	M	h	h	m	m	ETB

NN = ID [01 … 24]
HH = start hour
MM = start minute
hh = end hour
mm = end minute

Get shift variable

SOH	F	C	I	D	-	-	w	N	N	p	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	H	H	M	M	h	h	m	m	p	p	p	p	p	p	p	ETB

Set shift text

SOH	F	C	I	E	-	-	r	N	N	T	T	T	T	T	T	T	T	T	ETB

NN = ID [01 … 10]
T = max. 24 characters

Get shift variable

SOH	F	C	I	E	-	-	w	N	N	p	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	;	T	T	T	T	T	T	T	T	T	T	;	p	p	p	p	p	p	p	p	ETB

8.9 MC Data

SOH	BM	[n]	=	M	D	(	FN="filename"	;	SE='x'	;	CH=x	;	SC="x"	;	SF="x"	;	RC="x"	)	ETB

= MD	identification of MC data
FN	file name of table in the internal memory with CSV data
SE	Separator sign (default = ';')
CH	column name in the first line (0 = no, 1 = yes)
SC	name and/or number of column that should be referenced
SF	field name and/or field index of field onto the label, which contains the searched data
RC	name and/or number of column, which contains the data to be printed

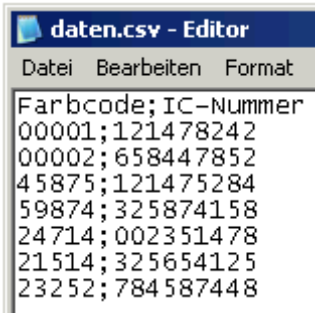
NOTICE!

If in parameter SF a field name is indicated, this must have beed defined for the appropriate field by an AC attribute statement!

Example

AC[1]NAME="FCODE"
BM[2]=MD(FN="a:\daten.csv";SE=';';CH=1;SC="Farbcode";SF="FCODE";
RC="IC-Nummer")

Field 1	Output Field 2
00001	121478242
23252	784587448



8.10 GS1-128 Parser

NOTICE!

By means of this variable type, the content of an application identifier in a GS1-128 bar code can be determined.

SOH	BM	[n]	=	A	I	(	p	;	Ai	)	ETB

= AI	identification of GS1-128 parser
p	identification of the link element (field number)
Ai	application identifier

Example

Field 1 ="00123456789012345675" GS1-128 with AI00

=AI(1;"00") Printout: 123456789012345675

8.11 EPC Calculation (Electronic Product Code)

SOH	BM	[n]	=	E	P	C	(	M	;	L	;	F	;	P	;	N1	;	{N2}	)	ETB

= EPC identification of EPC calculation
M coding method
L length of manufacturer number (company prefix)
F filter value
P verification of check digit
N1 identification of link element (field number)
N2 identification of link element (field number) - optional

For more information, visit the following web sites:
www.epcglobalinc.org or www.gs1.org

Param.	Value range		
M	0 = coding method SSCC96	3 = coding method GRAI96	
	1 = coding method SGTIN96	4 = coding method GIAI96	
	2 = coding method SGLN96		
L	6…12		
F	**Coding**	**Filter value**	**Binary**
	SSCC96	All Others	000
		Undefined	001
		Logistical / Shipping Unit	010
	SGTIN96	All Others	000
		Retail Consumer Trade Item	001
		Standard Trade Item Grouping	010
		Single Shipping/ Consumer Trade Item	011
	SGLN	All Others	000
		Physical Location	001
	GRAI	All Others	000
	GIAI	All Others	000
P	0 = no verification; 1 = verification		
N1, N2	any		

Example 1

Field 1 ="00123456789012345675“ GS1-128 with AI00
Field 2 =AI(1;“00“) --> Printout: 123456789012345675
Field 3 =EPC(0;12;0;1;2) --> Printout: 3100DA7557D32C38E7000000

The EPC is calculated with the content of Field 2. The coding method SSCC96 is used. In Field 2 a valid NVE must be represented (18-digit, correct check digit).

Example 2

Field 1 ="4141234567890128254123“ GS1-128 with AI00, AI254
Field 2 =AI(1;“414“) --> Printout: 1234567890128
Field 3 =AI(1;“254“) --> Printout: 123
Field 4 =EPC(2;10;0;0;2;3) --> Printout: 3208499602D218000000007B

The EPC is calculated with the content of Field 2 and Field 3. The coding method SGLN96 is used. In Field 2 a valid ILN must be represented (13-digit). In the example, Field 3 contains an optional serial number. No verification of check digit of ILN (8) is effected.

* with option RFID only

8.12 Check Digit

SOH	BM	[n]	=	C	D	(	d	;	s	;	l	;	t	;	w	;	m	;	r	;	o	)	t1	t…	t70	ETB

= CD Identification of check digit

d Data for check digit calculation (field number of constant text)
Constant text is enclosed in "".

s Start position within data

1 …n Start calculation at digit x

l Number of digits. If the parameter is not indicated, the remaining data (from start position) is used for the check digit calculation.

t Check digit type

0 Modulo 10 (weighting 3)

1 Modulo 11

2 Modulo 43

3 Modulo 47 (weighting 15)

4 Modulo 47 (weighting 20)

5 Modulo 103

6 Customized

Optional parameters for customized check digit

w Weighting.
Constant text enclosed in "" - contains the individual weighting values or an interval.
Individual values: "x_1,x_2"
Interval: "x_1…x_2"

m Modulo

r Add result to

o Print only one digit

0 No

1 Yes

Example

Entry: =CD("123456789012";0;0;0)
Printout: 8

Entry: =CD("1234567890";0;0;6;"1,3";10;10;1)
Printout: 5

8.13 Substring

SOH	BM	[n]	=	S	S	(	d	;	s	;	l	)	ETB

= SS	Identification of substring
d	Data used for substring extraction (field number or field name or constant text. Constant text is enclosed in "".
s	Start position within data. If this parameter is omitted, the substring extraction starts with the 1st character of the data string. 1 n Start at digit x
l	Number of digits. If this parameter is omitted, all characters from the start position to the end of the data string are returned. 1 …n At the start position x digits

Example:

Entry:	=SS("1234567890";4;3)
Printout:	456
	Field "ARTIKELNR" has the contents "370012330295"
Entry:	=SS(ARTIKELNR;1;4)
Printout:	3700

9 Parameter Sets

9.1 Label Parameters

Set label photocell type

SOH	F	C	D	E	-	-	r	N	-	-	-	-	-	-	ETB

N: 0 = transmission photocell normal
N: 1 = reflection photocell
N: 2 = transmission photocell inverse
N: 3 = reflection photocell inverse
N: 4 = ultrasonic photocell (option)

Get label photocell type

SOH	F	C	D	E	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set label type

SOH	F	C	D	A	-	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = change to adhesive labels (automatically measure process)
N: 1 = change to continuous labels

Get label type

SOH	F	C	D	A	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Measure label

In case of loading a new label roll it is possible to start measuring by this command.

SOH	F	C	B	-	-	-	r	-	-	-	-	-	-	-	-	ETB

The current label and gap length in the printer can be sent to the Host computer:

SOH	F	C	B	-	-	-	w	p	p	p	p	p	p	p	p	ETB

After this command the printer sends the following answer:

Answer

SOH	A	E	E	E	E	S	S	S	S	p	p	p	p	p	p	p	p	p	ETB

EEEE = label length in mm (ASCII)
SSSS = gap length in mm (ASCII)

Set label synchronisation at switching on

SOH	F	C	C	A	-	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = Off
N: 1 = Measure
N: 2 = Label feed

Get synchronisation at swiching on

SOH	F	C	C	A	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set label length in 1/100 mm

SOH	F	C	C	L	-	-	r	N	N	N	N	N	N	N	-	ETB

N = value of label length in 1/100 mm, 7 digit ASCII number

Get label length in 1/100 mm

SOH	F	C	C	L	-	-	w	N	N	N	N	N	N	N	-	ETB

Answer

SOH	A	N	N	N	N	N	N	N	-	p	p	p	p	p	p	p	p	ETB

Set gap length in 1/100 mm

SOH	F	C	C	M	-	-	r	M	M	M	M	M	-	-	-	ETB

M = value of gap length in 1/100 mm, 5 digit ASCII number

Get gap length in 1/100 mm

SOH	F	C	C	M	-	-	w	M	M	M	M	M	-	-	-	ETB

Answer

SOH	A	M	M	M	M	M	-	-	-	p	p	p	p	p	p	p	p	ETB

Set label width in 1/100 mm

SOH	F	C	C	O	-	-	r	N	N	N	N	N	N	N	ETB

N = indication of label width in 1/100 mm, 7 digit ASCII number

Get label width in 1/100 mm

SOH	F	C	C	O	-	-	w	P	P	P	P	P	P	P	P	ETB

Answer

SOH	A	N	N	N	N	N	N	N	-	p	p	p	p	p	p	p	p	ETB

Set label error length in mm

SOH	F	C	D	G	A	-	r	N	N	N	-	-	-	-	-	ETB

NNN = indication of label error length in 1/10 mm (1 … 999)

Get label error length

SOH	F	C	D	G	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set label synchronization

SOH	F	C	D	G	B	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = Off
N: 1 = On

Get label synchronization

SOH	F	C	D	G	B	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set number of columns

SOH	F	C	C	H	A	-	r	N	-	-	-	-	-	-	-	ETB

N = number of columns (1 … 9)

Get number of columns

SOH	F	C	C	H	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set column width

SOH	F	C	C	H	B	-	r	N	N	N	-	-	-	-	-	ETB

NNN = indication of column width in 1/10 mm (0 … 999)

Get column width

SOH	F	C	C	H	B	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set label alignment

SOH	F	C	C	J	-	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = left
N: 1 = centre
N: 2 = right

Get label alignment

SOH	F	C	C	J	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set contrast

SOH	F	C	A	B	-	-	r	N	N	N	-	-	-	-	-	ETB

NNN: indication of contrast in % (010 … 200)
necessary to transmit a 3 digit ASCII number.

Get contrast

SOH	F	C	A	B	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set flip label

SOH	F	C	D	O	-	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = flip label Off
N: 1 = flip label On

Get flip label

SOH	F	C	D	O	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set rotate label

SOH	F	C	D	N	-	-	r	X	-	-	-	-	-	-	-	ETB

X: 0 = rotate label Off
X: 1 = rotate label On

Get rotate label

SOH	F	C	D	N	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	X	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set mode flip/rotate label

SOH	F	C	D	S	-	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = flip/rotate label at the centre point of label
N: 1 = flip/rotate label at the centre point of printhead

Get mode flip/rotate label

SOH	F	C	D	S	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set scan position

SOH	F	C	D	E	A	-	r	N	N	-	-	-	-	-	-	ETB

NN = indication of scan position in % of the set label length (01 … 99)
value depends on the label length

Get scan position

SOH	F	C	D	E	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set sensitivity of transmission photocell

SOH	F	C	D	E	B	-	r	N	N	N	-	-	-	-	-	ETB

NNN = indication of photocell sensitivity
3 digit ASCII number (001 … 255)

Get sensitivity of transmission photocell

SOH	F	C	D	E	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set sensitivity of reflexion photocell

SOH	F	C	D	E	C	-	r	N	N	N	-	-	-	-	-	ETB

NNN = indication of photocell sensitivity
NNN = 3 digit ASCII number (001 … 255)

Get sensitivity of reflexion photocell

SOH	F	C	D	E	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

9.2 Photocells

Get minimal measured level at label photocell (label parameter A)

SOH	F	C	M	A	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

NNN = value of measured level, 3 digit ASCII number in 1/100 V

Get maximal measured level at label photocell (label parameter B)

SOH	F	C	M	A	B	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

NNN = value of measured level, 3 digit ASCII number in 1/100 V

Set switching threshold at label photocell (label parameter C)

SOH	F	C	M	A	C	-	r	N	N	N	-	-	-	-	-	ETB

NNN = value of switching threshold, 3 digit ASCII number in 1/100 V
value is automatically calculated at measuring process at printer $(\min+(\frac{\max-\min}{3})$

Get switching threshold

SOH	F	C	M	A	C	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

NNN = value at measured switching threshold
3 digit ASCII number in 1/100 V

Get current value at transfer ribbon photocell

SOH	F	C	M	B	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

N: 0 = transfer ribbon inserted
N: 1 = no transfer ribbon

Get current value at label photocell

SOH	F	C	M	B	B	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

NNN: value at label photocell, 3 digit ASCII number in 1/100 V

Get status at dispenser photocell

SOH	F	C	M	B	E	A	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

N: 0 = no label at photocell
N: 1 = label at photocell
Set switching threshold of dispenser photocell is taken into consideration.

9.3 Printer Parameters

Set print speed

SOH	F	C	A	A	-	-	r	N	N	N	-	-	-	-	-	ETB

NNN: Indication of print speed in mm/s
Pica II 104/8 + Pica II 104/8 T = 50 to 100
Pica II 106/12 + Pica II 106/12 T = 50 to 100
It is necessary to transmit a 3 digit ASCII number

Get print speed

SOH	F	C	A	A	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set transfer ribbon control On/Off

SOH	F	C	D	B	-	-	r	N	M	-	-	-	-	-	-	ETB

N: 1 = transfer ribbon control On
N: 0 = transfer ribbon control Off
M: 0 = weak sensibility
M: 1 = strong sensibility

Get transfer ribbon control On/Off

SOH	F	C	D	B	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	M	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set field handling

SOH	F	C	D	K	-	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = field handling Off
N: 1 = graphic received
N: 2 = delete graphic
N: 3 = restore graphic

Get field handling

SOH	F	C	D	K	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set printer language

SOH	F	C	D	I	-	-	r	N	-	-	-	-	-	-	ETB

N: 0 = German
N: 1 = English
N: 2 = French
N: 3 = Spanish
N: 4 = Finish
N: 5 = Czech
N: 6 = Portuguese
N: 7 = Netherlands
N: 8 = Italian
N: 9 = Danish
N: 10 = Polish
N: 11 = Greek
N: 12 = Hungarian
N: 13 = Russian
N: 14 = Chinese
N: 15 = not used
N: 16 = Ukrainian
N: 17 = Turkish
N: 18 = Swedish
N: 19 = Norwegian
N: 20 = Estonian

Get printer language

SOH	F	C	D	I	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set external printer parameters

SOH	F	C	C	P	-	-	r	N	-	-	-	-	-	-	ETB

N: 0 = only parameter settings by interface for label length, gap length and label width are taken into consideration.
N: 1 = parameter settings by interface are processed
N: 2 = parameter settings by interface are not taken into consideration

Get external printer parameters

SOH	F	C	C	P	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set Codepage

SOH	F	C	C	N	-	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = Codepage 1252 West European (former ANSI)
N: 1 = Codepage 437 English
N: 2 = Codepage 850 Western European
N: 3 - 8 = not used
N: 9 = Codepage 852 Slavic
N: 10 = Codepage 857 Turkish
N: 11 = Codepage 1250 Central and East European
N: 12 = Codepage 1251 Cyrillic
N: 13 = Codepage 1253 Greek
N: 14 = Codepage 1254 Turkish
N: 15 = Codepage 1257 Baltic
N: 16 = WGL4 (UTF-8 coded data transmission)

Please find the tables referring to the above mentionned character sets on www.carl-valentin.de/Downloads.

Get Codepage

SOH	F	C	C	N	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set sound level of key click (buzzer)

SOH	F	C	C	B	-	-	w	p	p	p	p	p	p	p	p	ETB

N: 0 = buzzer Off

N: 1-7 = sound level of key click

Get sound level of key click (buzzer)

SOH	F	C	C	B	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set standard label On/Off

SOH	F	C	M	K	E	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = Off (default) - print start without label definition signalizes error
N: 1 = On - standard label is printed without label definition

Get standard label On/Off

SOH	F	C	M	K	E	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set backfeed operating mode

SOH	F	C	M	R	A	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = standard
N: 1 = automatic
N: 2 = no backfeed
N: 3 = optimized

Get backfeed operating mode

SOH	F	C	M	R	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	P	p	p	p	p	p	ETB

Set backfeed delay

SOH	F	C	M	R	B	-	r	N	N	N	-	-	-	-	-	ETB

NNN: indication of delay time, 3 digit ASCII number in 1/100s

Get backfeed delay

SOH	F	C	M	R	B	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

9.4 Interface

By means of the following commands the parameters of the serial interface can be set. Note that after sending one of the commands also the host computer changes the corresponding parameter of its interface to allow further communication of host computer-printer.
For all interface commands the interface is fixed with x. The following values are allowed:
x = 1 ⇒ COM 1
x = 2 ⇒ COM 2

In all other cases automatically the first serial interface is addressed. In the answers the addressed interface is also returned.

Set all interface parameters

SOH	F	C	F	F	x	-	r	m	;	b	;	p	;	d	;	s	ETB

m = mode (0 = Off, 1 = On, 2 = On, without error message)
b = baud rate (2400, 4800, 9600, 19200, 38400, 115200)
p = parity (n = no parity, e = even parity, o = odd parity)
d = number of data bits (7, 8)
s = number of stop bits (1, 2)

Get all interface parameters

SOH	F	C	F	F	x	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	x	;	m	;	b	;	p	;	d	;	s	;	p	p	p	p	p	p	p	p	ETB

Example: activate interface COM1 and set 9600 Baud, no parity, 8 data bits, 2 stop bits
[SOH]FCFF1-r1;9600;n;8;2[ETB]

Interface protocol

There are two different interface protocols available. Usually SOH = 01_{Hex} and
ETB = 17_{Hex}. However there are host computers (e.g. AS/400), which cannot work with these characters. Therefore you can switch SOH = $5E_{Hex}$ and ETB = $5F_{Hex}$. The host computer has to change the corresponding parameter as well.

Set SOH and ETB

SOH	F	C	G	C	-	-	r	N	-	-	-	-	-	-	ETB

N: 0 = SOH = 01_{Hex}, ETB = 17_{Hex}
N: 1 = SOH = $5E_{Hex}$, ETB = $5F_{Hex}$

Get SOH and ETB

SOH	F	C	G	C	-	-	W	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

N: 0 = SOH = 01_{Hex}, ETB = 17_{Hex}
N: 1 = SOH = $5E_{Hex}$, ETB = $5F_{Hex}$
N: 2 = other character combination

Data memory

Set data memory

SOH	F	C	G	D	-	-	r	M	-	-	-	-	-	-	ETB

M: 0 = Off, after receiving FBCA0r or FBDA0r the interface is locked until the end of the print order, i.e. you cannot write more data in the receiving buffer.

M: 1 = Off, after receiving FBCA0r or FBDA0r the interface is locked until the end of the print order, i.e. you cannot write more data in the receiving buffer.

M: 2 = Extended, after starting a print order it is possible to write more data in the receiving buffer. These data is processed during the print and the next label is prepared.

Get data memory

SOH	F	C	G	D	-	-	W	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	M	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set reaction to unknown interrogative set

SOH	F	C	G	E	A	-	r	N	-	-	-	-	-	-	ETB

N = value range between 0 and 3

Get reaction to unknown questions

SOH	F	C	G	E	A	-	w	p	p	p	p	p	p	P	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

9.5 Offset Values

Set Y offset

SOH	F	C	C	D	-	-	r	V	N	N	N	-	-	-	-	ETB

V = offset prefix (+ or −)
NNN = offset value, 3 digit ASCII number in 1/10 mm

Get Y offset

SOH	F	C	C	D	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	V	N	N	N	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set X offset

SOH	F	C	C	E	-	-	r	V	N	N	N	-	-	-	-	ETB

V = offset prefix (+ or −)
NNN = offset value, 3 digit ASCII number in 1/10 mm

Get X offset

SOH	F	C	C	E	-	-	w	p	P	p	p	p	p	p	p	ETB

Answer

SOH	A	V	N	N	N	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set tear-off offset

SOH	F	C	C	G	-	-	r	V	N	N	N	-	-	-	-	ETB

V = offset prefix (always +)
NNN = offset value, 3 digit ASCII number in 1/10 mm

Get tear off offset

SOH	F	C	C	G	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	V	N	N	N	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set cutter offset

SOH	F	C	S	C	A	-	r	V	N	N	N	-	-	-	-	ETB

V = offset prefix (always +)
NNN = offset value, 3 digit ASCII number in 1/10 mm

Get cutter offset

SOH	F	C	S	C	A	-	w	p	P	p	p	p	p	p	p	ETB

Answer

SOH	A	V	N	N	N	-	-	-	-	p	p	p	p	p	p	p	-	ETB

Set dispenser offset

SOH	F	C	S	D	A	-	r	V	N	N	N	-	-	-	-	ETB

V = offset prefix (always +)
NNN = offset value, 3 digit ASCII number in 1/10 mm

Get dispenser offset

SOH	F	C	S	D	A	-	w	P	p	p	p	p	p	p	p	ETB

Answer

SOH	A	V	N	N	N	-	-	-	-	p	p	p	p	p	p	p	p	ETB

9.6 Service Functions

Set zero point adjustment (Y value)

SOH	F	C	C	R	-	-	r	V	N	N	N	-	-	-	-	ETB

Get zero point adjustment (Y value)

SOH	F	C	C	R	-	-	w	p	p	p	p	p	p	p	p	ETB

V: offset prefix (+ or −)
NNN: offset value
3 digit ASCII number in 1/100 mm (-999 … +999)

Answer

SOH	A	V	N	N	N	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set zero point adjustment (X value)

SOH	F	C	C	T	-	-	r	V	N	N	N	-	-	-	-	ETB

Get zero point adjustment (X value)

SOH	F	C	C	T	-	-	w	p	p	p	p	p	p	p	p	ETB

V: offset prefix (+ or −)
NNN: offset value
NNN: 3 digit ASCII number in 1/100 mm (-999 … +999)

Answer

SOH	A	V	N	N	N	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set reprint action

SOH	F	C	M	K	D	-	r	N	-	-	-	-	-	-	-	ETB

Get reprint action

SOH	F	C	M	K	D	-	w	p	p	p	p	p	p	p	p	ETB

N: 0 = complete reprint
N: 1 = empty reprint

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Get printhead temperature

SOH	F	C	M	C	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

NNN = value of temperature, 3 digit ASCII number in degrees

Set transfer ribbon prior warning

SOH	F	C	M	L	A	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = Off
N: 1 = On

Get transfer ribbon prior warning

SOH	F	C	M	L	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	P	p	p	p	p	ETB

Set printhead resistance

SOH	F	C	M	G	-	-	r	N	N	N	N	N	-	-	-	ETB

NNNNN = value of resistance in Ohm.

Get printhead resistance

SOH	F	C	M	G	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	N	N	-	-	-	p	p	p	p	p	p	p	p	ETB

Set print length correction

SOH	F	C	M	T	-	-	r	V	N	N	N	-	-	-	-	ETB

V: offset prefix (+ or −)
NNN: print length correction value
3 digit ASCII number in 1/10 % (-100 … +100)

Get print length correction

SOH	F	C	M	T	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	V	N	N	N	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set custom logo

SOH	F	C	N	R	A	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = Off
N: 1 = On

Get custom logo

SOH	F	C	N	R	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Paper counter

The paper counter (kilometer value) of printer as well as of printhead can only be enquired by interface and not reset to 0.

Get paper counter of printer

SOH	F	C	H	A	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	N	N	N	N	N	p	p	p	p	p	p	p	p	ETB

Get paper counter of printhead

SOH	F	C	H	B	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	N	N	N	N	N	p	p	p	p	p	p	p	p	ETB

NNNNNNNN = kilometer value of printer and/or printhead in meters
(e.g. '00000123' = 123 m)

9.7 Date & Time

Set date

SOH	F	C	I	A	-	-	r	D	D	M	O	Y	Y	D	W	ETB

DD = day of month
MO = month
YY = year
DW = day of week ('00' = Sunday)

Get date

SOH	F	C	I	A	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	D	D	M	O	Y	Y	D	W	p	p	p	p	p	p	p	p	ETB

Set time

SOH	F	C	I	B	-	-	r	H	H	M	I	S	S	A	M	ETB

HH = hours
MI = minutes
SS = seconds
AM = mode ('am' = 12 hours mode AM, 'pm' = 12 hours mode PM, '—' = 24 hours mode)

Get time

SOH	F	C	I	B	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	H	H	M	I	S	S	A	M	p	p	p	p	p	p	p	p	ETB

Automatically adjust clock for daylight saving changes

Because of the fact that there is no world-wide regulation if and when a changing of time between summer and wintertime (normal time) in the individual countries takes place, we distinguish between the following four formats for the definition for beginning and end of summertime.

F 0:	European format start of summertime = last Sunday in March end of summertime = last Sunday in October **W:** week (1 = first, …, 5 = last) **WD:** day of week (0 = Sunday, …, 6 = Saturday) **MM:** month (01 = January, …, 12 = December)
F 1:	Fix date with indication of year **DD:** day **MM:** month (01 = January, …, 12 = December) **YY:** year
F 2:	Fix date without indication of year **DD:** day **MM:** month (01 = January, …, 12 = December)
F 3:	Week day after day in month **WD:** day of week (0 = Sunday, …, 6 = Saturday) **DD:** after day (only the first day is taken into consideration) **MM:** month (01 = January, …, 12 = December)

Set automatically adjust clock for daylight saving changes

SOH	F	C	I	G	-	-	r	N	-	-	-	-	-	-	ETB

Get automatically adjust clock for daylight saving changes

SOH	F	C	I	G	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

N: 0 = Automatically adjust clock for daylight saving changes Off
N: 1 = Automatically adjust clock for daylight saving changes On

Set beginning of summertime

F 0: SOH F C I H - - r F W ; WD ; M M ; H H ; M M ETB

F 1: SOH F C I H - - r F D D ; M M ; Y Y ; H H ; M M ETB

F 2: SOH F C I H - - r F D D ; M M ; H H ; M M ETB

F 3: SOH F C I H - - r F WD ; D D ; M M ; H H ; M M ETB

Get beginning of summertime

SOH F C I H - - w p p p p p p p p ETB

Answer

SOH A F W W D M M p p p p p p p p ETB

The answer depends on each set format.

Set end of summertime

F 0: SOH F C I I - - r F W ; WD ; M M ; H H ; M M ETB

F 1: SOH F C I I - - r F D D ; M M ; Y Y ; H H ; M M ETB

F 2: SOH F C I I - - r F D D ; M M ; H H ; M M ETB

F 3: SOH F C I I - - r F WD ; D D ; M M ; H H ; M M ETB

Get end of summertime

SOH F C I I - - w p p p p p p p p ETB

Answer

SOH A F W W D M M p p p p p p p p ETB

The answer depends on each set format.

Set time shifting

SOH F C I J - - r N N N - - - - - ETB

NNN = minutes

Get time shifting

SOH F C I J - - w p p p p p p p p ETB

Answer

SOH A N N N p p p p p p p p ETB

9.8 Internal Memory

NOTICE!

The printer of Pica II series are equipped with an internal drive (256 KB)

Save a label onto internal memory

SOH	F	M	A	O	-	-	r	P	ETB

O: In case a label with the entered name exists already then the label is overwritten without an enquiry. If you enter another value as 0, an enquiry appears demanding if you want to overwrite.
P: File name of the label which is to save. Drive and path name are optional, i.e. the file name is allowed to have more than 8 characters but is limited to 79.

Load a file from internal memory

SOH	F	M	B	-	-	-	r	P	ETB

P: File name of the layout which is to load. Drive and path name are optional, i.e. the file name is allowed to have more than 8 characters but is limited to 79.

Delete a layout from internal memory

SOH	F	M	C	-	-	-	r	P	ETB

P: File name of the layout which is to delete. Drive and path name are optional, i.e. the file name is allowed to have more than 8 characters but is limited to 79.

Format internal memory

SOH	F	M	D	-	-	-	r	P	ETB

P: Optional drive identification with colon (e.g. A:).
In case no drive is indicated, then the currently selected is formatted.

Readout contents of internal memory

SOH	F	M	G	O	-	-	r	P	ETB

O: In case O is indicated, no error messages are displayed at the printing display e.g. if no card is inserted.
P: Optional drive identification with colon (e.g. A:).
Fin case no drive is indicated, then the currently selected is read out.

Answer

SOH	File name/directory name	ETB

A list of all file entries is indicated, each entry is included in (SOH) and (ETB).

Readout free memory space

SOH	F	M	H	O	-	-	w	X	p	p	p	p	p	p	p	p	ETB

O: In case O is indicated, no error messages are displayed at the printing display e.g. if no card is inserted.
X = Drive [A,B] (optional)

Answer

SOH	A	X	n	n	n	n	-	-	-	p	p	p	p	p	p	p	p	ETB

X = Drive [A,B]
n = Memory space in KB

Create directory

SOH	F	M	I	O	-	-	r	P	ETB

O: In case a label with the entered name already exists, then it is overwritten without an enquiry.
If you enter another value as O, an enquiry appears demanding if you want to overwrite.
P = Drive and path indication

Delete directory

SOH	F	M	J	-	-	-	r	P	ETB

P = Drive and path indication

NOTICE!

The current directory cannot be deleted.

Delete directory path

SOH	F	M	J	A	-	-	r	P	ETB

Deletes the indicated directory including all containing sub-directories and files.

Change standard directory

SOH	F	M	K	-	-	-	r	P	ETB

P = Drive and path indication

Readout current directory

SOH	F	M	K	-	-	-	w	ETB

Answer

SOH	A	P	ETB

P = Current directory

Set standard directory for file selection via I/O

SOH	F	M	K	B	-	-	r	N	ETB

N = directory path

Get standard directory for file selection via I/O

SOH	F	M	K	B	-	-	w	p	p	p	p	p	p	p	p	ETB

Antwort

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Transfer file

SOH	F	M	L	-	-	-	w	P	ETB

P: File name of file which is to transfer. Drive name and path name are optional, i.e. the file name is allowed to have more than 8 characters but is limited to 79.

Answer

SOH	A	F	*	S	ETB	Data

F = File name
S = File size in Byte
Data = Binary data

Enquiry if the file exists

SOH	F	M	M	-	-	-	w	P	ETB

P: File name of file which is to transfer. Drive name and path name are optional, i.e. the file name is allowed to have more than 8 characters but is limited to 79.

Answer

SOH	A	X	P	ETB	Daten

X: 0 = File does not exist
1 = File exists
P = File name

Readout size of internal memory

SOH	F	M	P	O	-	-	w	X	ETB

O: In case O is indicated, no error messages are displayed at the printing display e.g. if no card is inserted.
X: Drive [A,B] (optional)

Answer

SOH	A	D	n	n	n	n	-	-	-	X	ETB

X = Drive [A,B]
n = Memory in KB
D = enquired drive

Drive status

SOH	F	M	S	-	-	-	w	X	ETB

X - Drive [A,B]

Answer

SOH	A	X	S	ETB

X = Drive [A,B]
S = Status
0: no storage medium
1: not formatted
2: ready
3: not determinable

9.9 Printing

Set number of lines (n digits)

SOH	F	B	A	A	-	-	r	N	ETB

N = number of lines in ASCII (1, 10, 100, …)

Get number of lines

SOH	F	B	A	A	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Start/Stop Command

In addition to the actual start/stop command, the print order can also be interrupted via the parameter/remote record.

SOH	F	D	-	-	-	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = stop printing
N: 1 = continue printing
N: 2 = cancel print order if it is already stopped

Reset error

Reset error

SOH	F	C	M	H	-	-	r	N	N	N	N	-	-	-	-	ETB

NNNN = current error ID or '9999'

Get error

SOH	F	C	M	H	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	N	0	0	0	0	p	p	p	p	p	p	p	p	ETB

Readout error ID and error text

SOH	F	C	M	H	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	N	;	error text	;	p	p	p	p	p	p	p	p	ETB

Item number of print order

By means of this command the Host computer can enquire following item numbers:

Total number of current print order

SOH	F	B	B	A	-	-	w	p	p	p	p	p	p	p	p	ETB

Number of labels which are still to print

SOH	F	B	B	B	-	-	w	p	p	p	p	p	p	p	p	ETB

Number of already printed labels

SOH	F	B	B	C	-	-	w	p	p	p	p	p	p	p	p	ETB

Interval in cutter mode

SOH	F	B	B	D	-	-	w	p	p	p	p	p	p	p	p	ETB

At the end of one of these commands the printer returns the corresponding number as ASCII value
(4 res. 5 digits) in the answer set.

Answer

SOH	A	N	N	N	N	-	-	-	-	p	p	p	p	p	p	p	p	ETB

With this set it is also possible to transmit the item number of print order and the interval (in cutter mode) to the printer.

Item number of print order

SOH	F	B	B	A	-	-	r	N	N	N	N	N	-	-	-	ETB

NNNNN = 5 digits item number of order

Interval in cutter mode

SOH	F	B	B	D	-	-	r	N	N	N	N	-	-	-	-	ETB

NNNNN = interval

Reset interval counter in cutter mode

SOH	F	B	B	D	A	-	r	-	-	-	-	-	-	-	-	ETB

Readout interval counter in cutter mode

SOH	F	B	B	D	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	N	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Start printing

SOH	F	B	C	-	-	-	r	S	-	-	-	-	-	-	-	ETB

This command starts the print order which is actually set in the printer. The current parameters such as print mode, speed, initialization etc. are used.

S = x: sorted (e.g. pages 1-5, then again 1-5 etc. are printed)
S = 1: unsorted (page 1 is printed x times, then page 2 x times, etc.)

SOH	F	B	D	-	-	-	r	S	-	-	-	-	-	-	-	ETB

Start printing (see above) but without tear off offset.

SOH	F	B	E	-	-	-	r	n	n	n	n	n	n	n	n	ETB

With this command the printjob identifier which appears in "printing" res. "stopped" window is assigned to a print order. If only blanks are transmitted, then the printjob identifier is deleted and the display shows "noname".

Initialization of page handling

SOH	F	B	F	-	-	-	r	ETB

Selection of current page

SOH	F	B	G	-	-	-	r	P	ETB

P = current page number [1…9]

Select order of pages to be printed

SOH	F	B	H	-	-	-	r	P_1	P_2	P_3	ETB

P_1; P_2;…= pages to be printed

Generation of page without print start

SOH	F	B	I	-	-	-	r	S	ETB

With this command the corresponding page is only generated, i.e. no print start signal is sent.

S = x: sorted (e.g. pages 1-5, then again 1-5 etc. are printed)
S = 1: unsorted (page 1 is printed x times, then page 2 x times, etc.)

Feed

Parameter set to release a feed

SOH	F	E	-	-	-	-	r	-	-	-	-	-	-	-	ETB

Test print

Parameter set to release a test print

SOH	F	F	-	-	-	-	r	-	-	-	-	-	-	-	ETB

Status print

Parameter set to print a status print

SOH	F	C	M	Q	-	-	r	N	-	-	-	-	-	-	ETB

N: 0 = printer settings
N: 1 = bar codes
N: 2 = fonts

Cancel print orders

Parameter set to cancel all active print orders

SOH	F	G	A	-	-	-	r	N	-	-	-	-	-	-	ETB

N: - = Cancel active print orders and delete all label data

N: 1 = Cancel active print orders and receive new label data

With the execution of this command:

- possible upcoming errors are confirmed

10 Parameter Sets for Options

10.1 Network

SOH	F	C	L	A	-	-	r	C	0	A	8	0	0	1	5	ETB

All network parameter sets start in the third column with a 'L'. Column 4 shows the identification for the corresponding network parameter. Column 5 can show another sub-identification.
Because of the fact that the argument size is limited to 8 characters, the IP addresses (IP address, network mask, gateway address) which consist of 32 bit are transmitted in HEX presentation.
For all data which is transmitted in HEX presentation (also the MAC address) it is allowed to use capital as well as small letters.
In contrary to the parameter settings of the other interfaces, the settings of the following sets were saved immediately onto Flash, i.e. it is not necessary to save the currently set configuration before switching off the printer so the modifications are still available after switching on.
So that the made modifications become active, also without printer Reset it is necessary to transmit a corresponding Z set which effects a Reset of the network devices.

Set IP address (e.g. 192.168.0.21)

SOH	F	C	L	A	-	-	r	C	0	A	8	0	0	1	5	ETB

Get IP address

SOH	F	C	L	A	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	C	0	A	8	0	0	1	5	p	p	p	p	p	p	p	p	ETB

Set netmask (e.g. 255.255.255.0)

SOH	F	C	L	B	-	-	r	F	F	F	F	F	F	0	0	ETB

Get netmask

SOH	F	C	L	B	-	-	w	F	F	F	F	F	F	0	0	ETB

Answer

SOH	A	F	F	F	F	F	F	0	0	p	p	p	p	p	p	p	p	ETB

Set Gateway address (e.g. 192.168.0.1)

SOH	F	C	L	C	-	-	r	C	0	A	8	0	0	0	1	ETB

Get Gateway address

SOH	F	C	L	C	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	C	0	A	8	0	0	0	1	p	p	p	p	p	p	p	p	ETB

Set transmission mode (e.g. auto recognition)

SOH	F	C	L	D	-	-	r	0	-	-	-	-	-	-	ETB

0 = auto recognition
1 = 10 MBit/s half duplex
2 = 10 MBit/s full duplex
3 = 100 MBit/s half duplex
4 = 100 MBit/s full duplex

Get transmission mode

SOH	F	C	L	D	-	-	w	0	-	-	-	-	-	-	ETB

Answer

SOH	A	0	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set DHCP support

SOH	F	C	L	E	-	-	r	N	ETB

N: 0 = Off
N: 1 = On

Get DHCP support

SOH	F	C	L	E	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Assign printer name

SOH	F	C	L	F	-	-	R	N	N	N	N	N	N	N	N	N	N	N	ETB

N = printer name can consist of max. 11 characters
[A…Z, a…z, 0…9, -, -]

Get printer name

SOH	F	C	L	F	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	N	N	N	N	;	p	p	p	p	p	p	p	p	ETB

Set MAC address (e.g. 00-07-4A-43-19-08)

SOH	F	C	L	M	B	-	r	0	0	0	7	4	A	-	-	ETB

SOH	F	C	L	M	A	-	r	4	3	1	9	0	8	-	-	ETB

SOH	F	C	L	M	C	-	r	0	0	0	7	4	A	1	9	0	8	ETB

A MAC address has a width of 48 bit and is normally indicated in hexadecimals.
With the B record our identifier of the MAC address can be changed. All our machines start with 00-07-4A as default. This corresponds to the Memory-Pool which the MAC address committee assigned to us to guarantee that the MAC address is world-wide manufacturer-spreading unique.

With the A record any address can be set in our pool.
With the C record any address in our pool and the identification of the MAC address can be set/changed at the same time.

Get MAC address

SOH	F	C	L	M	B	-	w	0	0	0	7	4	A	-	-	ETB

SOH	F	C	L	M	A	-	w	4	3	1	9	0	8	-	-	ETB

SOH	F	C	L	M	C	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	0	0	0	7	4	A	-	-	p	p	p	p	p	p	p	p	ETB

SOH	A	4	3	1	9	0	8	-	-	p	p	p	p	p	p	p	p	ETB

SOH	A	0	0	0	7	4	A	4	3	1	9	0	8	p	p	p	p	p	p	p	p	ETB

NTP Server

NTP (Network Time Protocol) is a standardized Internet protocol permitting the synchronization of real-time clocks of network participants. The printer connects itself with a time server and align every 60 minutes its internal real-time clock with that of the time server in order to correct possible differences.
The address of server (IP address) can be freely configured in the printer. The communication is effected by UDP and the fixed set port 123. The service in the printer is deactivated by transmitting the server address 0.0.0.0.
The time servers work together with the coordinated world time (UTC) and therefore an additional time shift is needed compared to the reference time. For Germany it is e.g. +1 hour.
The current state of the connexion can be queried with a status set.

Set NTP Server IP

SOH	F	C	L	N	I	-	r	N	ETB

N = X.X.X.X (X = 0 … 255)

Get NTP Server IP

SOH	F	C	L	N	I	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	N	N	N	N	N	p	p	p	p	p	p	p	p	ETB

0.0.0.0 deactivates the NTP service

Readout NTP status

SOH	F	C	L	N	S	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

N: 0 = Off
N: 1 = OK
N: 2 = Error

Set time zone (hour offset)

SOH	F	C	L	N	Z	-	r	N	ETB

N: -12, 12

Get time zone (hour offset)

SOH	F	C	L	N	Z	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	N	N	N	N	N	p	p	p	p	p	p	p	p	ETB

Reset Network Device

SOH	F	C	L	Z	-	-	r	--------	ETB

For this set is no enquiry possible. This set causes that modifications made by the transfer of the previous sets become effective.

10.2 WLAN (Wireless Local Area Network)

Get connection status

SOH	F	C	W	C	-	-	w	p	p	p	p	p	p	p	p	ETB

N: 0 = not connected
N: 1 = connected

Answer

SOH	A	N	i	p	p	p	p	p	p	p	p	ETB

Set DHCP support

SOH	F	C	W	D	-	-	r	x	ETB

x: 0 = Offs
x: 1 = On

Get DHCP support

SOH	F	C	W	D	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	x	i	p	p	p	p	p	p	p	p	ETB

Set encryption type

SOH	F	C	W	E	-	-	r	x	ETB

x: 0 = Off
x: 1 = WEP64
x: 2 = WEP128
x: 3 = WPA
x: 4 = WPA2

Get encryption type

SOH	F	C	W	E	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	x	;	p	p	p	p	p	p	p	p	ETB

Readout MAC address

SOH	F	C	W	F	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	;	p	p	p	p	p	p	p	p	ETB

N: Character string

Set Gateway address (e.g. 192.168.1.2)

SOH	F	C	W	G	-	-	r	x	ETB

x = 192.168.1.2

Get Gateway address

SOH	F	C	W	G	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	1	9	2	.	1	6	8	.	1	.	2	;	p	p	p	p	p	p	p	p	ETB

Set IP address (e.g. 192.168.1.21)

SOH	F	C	W	I	-	-	r	x	ETB

x = 192.168.1.21

Get IP address

SOH	F	C	W	I	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	1	9	2	.	1	6	8	.	1	.	2	1	;	p	p	p	p	p	p	p	p	ETB

Set WPA/WPA2 encryption

SOH	F	C	W	K	-	-	r	x	ETB

x = Hex string, 64 characters or ASCII, max. 63 characters

Answer

SOH	A	x	;	ETB

Set netmask (e.g. 255.255.255.0)

SOH	F	C	W	M	-	-	r	x	ETB

x = 255.255.255.0

Get netmask

SOH	F	C	W	M	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	2	5	5	.	2	5	5	.	2	5	5	.	0	;	p	p	p	p	p	p	p	p	ETB

Get server port (e.g. 9001)

SOH	F	C	W	P	-	-	w	p	p	p	p	p	p	p	p	ETB

Value range for x = 1 - 65535

Answer

SOH	A	9	0	0	1	;	p	p	p	p	p	p	p	p	ETB

Readout anew configuration from WLAN module and transfer to the printer

SOH	F	C	W	R	-	-	r	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	;	p	p	p	p	p	p	p	p	ETB

N: OK
N: Error

Set SSID (Service Set Identifier) identification (e.g. TESTWLAN)

SOH	F	C	W	S	-	-	r	x	ETB

x = TESTWLAN

Get SSID identification

SOH	F	C	W	S	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	T	E	S	T	W	L	A	N	;	p	p	p	p	p	p	p	p	ETB

Set WEP64 encryption

SOH	F	C	W	V	-	-	r	x	ETB

x = Hex string, 10 characters

Answer

SOH	A	x	;	ETB

Set WEP128 encryption

SOH	F	C	W	W	-	-	r	x	ETB

x = Hex string, 26 characters

Answer

SOH	A	x	;	ETB

Save settings and restart of WLAN module

SOH	F	C	W	X	-	-	r	-	-	-	-	-	-	-	ETB

Answer

SOH	A	N	i	p	p	p	p	p	p	p	ETB

N: OK
N: Error

Set high speed data connection

SOH	F	C	W	H	-	-	r	x	ETB

This setting is specified at the printer and if an active connection to the WLAN module exists, in the WLAN module, too. Subsequently the printer is again started.

x: 0 = Normal speed (115200 baud, no handshake)
x: 1 = High speed (921600 baud (adjustable), RTS/CTS handshake)

Get high speed data connection

SOH	F	C	W	H	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	x	p	p	p	p	p	p	p	p	ETB

Set high speed baud rate

SOH	F	C	W	B	-	-	r	b	ETB

This setting is specified at the printer and if an active connection to the WLAN module exists, in the WLAN module, too. Subsequently the printer is again started.

b = baud rate (115200, 230400, 460800, 921600)

Get high speed baud rate

SOH	F	C	W	B	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	b	p	p	p	p	p	p	p	p	ETB

10.3 Cutter

Set cutter mode

SOH	F	C	D	D	-	-	r	N	-	-	-	-	-	-	ETB

N: 0 = Cutter mode Off
N: 1 = Single cut
N: 2 = Mode 1 (without cutter offset), print number of pieces with cut after each label without backfeed
N: 3 = Mode 2 (with backfeed), print number of pieces with cut after each label with backfeed
N: 4 = Interval cut with final cut, transmit interval with later
N: 5 = Interval cut without final cut, transmit interval width later
N: 6 = Final cut (cut after print end)

Get cutter mode

SOH	F	C	D	D	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set cutter offset

SOH	F	C	S	C	A	-	r	V	N	N	N	-	-	-	-	ETB

V: pre-sign of offset (always +)
NNN: offset value, 3 digit ASCII number in 1/10 mm

Get cutter offset

SOH	F	C	S	C	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	V	N	N	N	-	-	-	-	p	p	p	p	p	p	p	-	ETB

Set control

SOH	F	C	S	C	D	-	r	M	-	-	-	-	-	-	-	ETB

M: 0 = automatic cutter mode
M: 1 = external, cut can be effected by I/O

Get control

SOH	F	C	S	C	D	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	M	-	-	-	-	-	-	x	p	p	p	p	p	p	p	p	ETB

Set automatic return On/Off

SOH	F	C	S	C	F	-	r	N	-	-	-	-	-	-	ETB

N: 0 = Off
N: 1 = On (default)

Get automatic return On/Off

SOH	F	C	S	C	F	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

10.4 Dispenser I/O

Set dispenser mode

SOH	F	C	D	C	-	-	r	N	-	-	-	-	-	-	ETB

N: 0 = Dispenser mode Off
N: 1 = External I/O static
N: 2 = Dispenser photocell
N: 3 = External I/O static continuous
N: 4 = Dispenser photocell continuous
N: 5 = External I/O dynamic
N: 6 = External I/O dynamic continuous

Get dispenser mode

SOH	F	C	D	C	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set dispenser level photocell

SOH	F	C	C	F	-	-	r	V	N	N	-	-	-	-	-	ETB

V = pre-sign of offset (always +)
NN = offset value, 2 digit ASCII number in 1/10 Volt (5 … 40)

Get dispenser level photocell

SOH	F	C	C	F	-	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	V	N	N	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set sensitivity of dispenser photocell

SOH	F	C	C	F	A	-	r	N	N	N	-	-	-	-	-	ETB

NNN = Indication of photocell sensitivity
3 digit ASCII number (001 … 255)

Get sensitivity of dispenser photocell

SOH	F	C	C	F	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	V	N	N	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Get status of I/O inputs

SOH	F	C	M	D	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	1	2	3	4	5	6	7	8	p	p	p	p	p	p	p	p	ETB

Inputs 1-8 / IO port 1-8:

1 = Port active
0 = Port not active
- = Port not connected, signal blocked or output

Get status of I/O inputs

SOH	F	C	M	D	A	B	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	p	p	p	p	p	p	p	p	ETB

Inputs 1-16 / IO port 1-16:

1 = Port active
0 = Port not active
- = Port not connected, signal blocked or output

Get status of I/O outputs

SOH	F	C	M	D	B	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	1	2	3	4	5	6	7	8	p	p	p	p	p	p	p	p	ETB

Outputs 1-8 / IO port 9-16:

1 = Port active
0 = Port not active
- = Port not connected, signal blocked or input

Get status of I/O outputs

SOH	F	C	M	D	B	B	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	p	p	p	p	p	p	p	p	ETB

Outputs 1-16 / IO port 1-16:

1 = Port active
0 = Port not active
- = Port not connected, signal blocked or input

Set IN signal level

SOH	F	C	M	D	C	-	r	1	2	3	4	5	6	7	8	ETB

IO port 1-8 (dispenser inputs 1-8):

2 = Increased and decreased
1 = Increased
0 = Decreased
s = I/O signal by interface
x = I/O signal blocked

Only possible for IO ports that are specified as input.

Get IN signal level

SOH	F	C	M	D	C	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	1	2	3	4	5	6	7	8	p	p	p	p	p	p	p	p	ETB

Set IN signal level

SOH	F	C	M	D	C	B	r	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	ETB

IO port 1-16 (dispenser inputs 1-16):

2 = Increased and decreased
1 = Increased
0 = Decreased
s = I/O signal by interface
x = I/O signal blocked

Only possible for IO ports that are specified as input.

Get IN signal level

SOH	F	C	M	D	C	B	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	p	p	p	p	p	p	p	p	ETB

Set OUT signal level

SOH	F	C	M	D	D	-	r	1	2	3	4	5	6	7	8	ETB

IO port 9-16 (dispenser outputs 1-8):

1 = Signal level 1
0 = Signal level 0
s = I/O signal by interface
x = I/O signal blocked

Only possible for IO ports that are specified as output.

Get OUT signal level

SOH	F	C	M	D	D	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	1	2	3	4	5	6	7	8	p	p	p	p	p	p	p	p	ETB

Set OUT signal level

SOH	F	C	M	D	D	B	r	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	ETB

IO port 1-16 (dispenser output 1-16):

1 = Signal level 1
0 = Signal level 0
s = I/O signal by interface
x = I/O signal blocked

Only possible for IO ports that are specified as output.

Get OUT signal level

SOH	F	C	M	D	D	B	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	p	p	p	p	p	p	p	p	ETB

Set software input

SOH	F	C	M	D	F	-	r	1	2	3	4	5	6	7	8	ETB

IO port 1-8 (dispenser inputs 1-8):

1 = Set software input
0 = Delete software input
- = Ignore software input
P = Pulse, run software input once

Only possible for IO ports whose input signal levels are activated for interface.

Example: Activate a start impulse
`(SOH)FCMDF-rP-------(ETB)`

Set software input

SOH	F	C	M	D	F	B	r	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	ETB

IO port 1-16 (dispenser inputs 1-16):

1 = Set software input
0 = Delete software input
- = Ignore software input
P = Pulse, run software input once

Only possible for IO ports whose input signal levels are activated for interface.

An IO port that was set (1) must be deleted (0) first to activate a function when next setting (1).

Example: Activate a start impulse
`(SOH)FCMDFBrP---------------(ETB)`

Set software output

SOH	F	C	M	D	G	-	r	1	2	3	4	5	6	7	8	ETB

IO Port 9-16 (sispenser outputs 1-8):

1 = Set software output
0 = Delete software output

Only possible for IO ports whose output signal levels are activated for interface.

Set software output

SOH	F	C	M	D	G	B	r	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	ETB

IO Port 1-16 (dispenser outputs 1-16):

1 = Set software output
0 = Delete software output

Only possible for IO ports whose output signal levels are activated for interface.

Set dispenser offset

SOH	F	C	S	D	A	-	r	V	N	N	N	-	-	-	-	ETB

V = prefix of offsets (always +)
NNN = offset value, 3 digit ASCII number in 1/10 mm

Get dispenser offset

SOH	F	C	S	D	A	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	V	N	N	N	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set external synchronization

SOH	F	C	S	D	B	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = Off
N: 1 = On

Get external synchronization

SOH	F	C	S	D	B	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set start signal delay

SOH	F	C	S	D	D	-	r	N	N	N	-	-	-	-	-	ETB

NNN = start signal delay in 1/100 s (0 … 999)

Get start signal delay

SOH	F	C	S	D	D	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	N	N	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set save start signal

SOH	F	C	S	D	E	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = Off
N: 1 = On

Get save start signal

SOH	F	C	S	D	E	-	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Set cancel continuous printing (operating mode)

SOH	F	C	S	D	F	A	r	N	-	-	-	-	-	-	-	ETB

N: 0 = Off
N: 1 = On

Get cancel continuous printing (operating mode)

SOH	F	C	S	D	F	A	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

Dispenser photocell

Get status of dispenser photocell

SOH	F	C	M	B	E	A	w	p	p	p	p	p	p	p	p	ETB

Answer

SOH	A	N	-	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB

N: 0 = no label at photocell
N: 1 = label at photocell
The set switching threshold of dispenser photocell is taken into consideration.

11 Configuration & Status

Save configuration permanent

In case you want to save the described settings permanent into the printer, then you have to transmit the following command to the printer.

SOH	F	X	-	-	-	-	r	N	-	-	-	-	-	-	-	ETB

N: 0 = save current parameter
N: 1 = set all parameters to default values
Then the printer performs a restart

Read configuration

SOH	F	X	-	-	-	-	w	-	-	-	-	-	-	-	-	ETB

The printer sends as answer all current settings as parameter sets.

Status enquiry

Host computer can receive information about the printer by the serial interface.
The status enquiry has the following data format:

SOH	S	ETB

Status return information

After receiving the status enquiry the printer sends the corresponding status return information.

Data format of status enquiry

SOH 1. Byte 2. Byte 5.-1. digit ETB
8 7 6 5 4 3 2 1 8 7 6 5 4 3 2 1

1. Byte	=	1. Status byte
		8. Bit = free 7. Bit = always set 6. Bit = free 5. Bit = 1 = running print order 0 = no. of items (0 = no print order) 4. Bit = 1 = press stop key 0 = not pressed stop key 3. Bit = cutter error (0 = no error; 1 = error) 2. Bit = label material (0 = no error; 1 = error) 1. Bit transfer ribbon (0 = no error; 1 = error)
2. Byte	=	2. Status byte
		8. Bit – 4. Bit = free 3. Bit = Compact Flash card 2. Bit = Mask set 1. Bit = Printhead temperature
5.-1. digit	=	number of pieces with 5 digits as ASCII characters min. '00000' / max. '65535'

11.1 Autostatus

The printers are equipped with an auto status function, i.e. in certain operating modes the printer actively sends the corresponding status. This can be enquired by the serial interface.

To activate the auto status, the host computer has to send the following command to the printer:

SOH	G	1. Byte	2. Byte	ETB

Each of the below indicated message which is observed and send by the printer has to be transmitted with a set Bit (see table below 1. Byte and 2. Byte) to the printer by means of auto state function. The printer sends after each performed condition the corresponding message (answer) to the host computer.

The following messages are provided:

1. **Start of generation**
2. **End of generation**
   The printer sends this state in case data for a complete label was generated. The test print was not taken into consideration.
   For counters/date variables the printer sends for each label a status cycle (start, end).
3. **Start of printing**
4. **End of printing**
   The start of the print is send in case the generated data is send. The end of the print is send in case the print of the label is finished and the motor has stopped.
5. **Start of cutting**
6. **End of cutting**
   This status describes the cutting. It can be checked for timeout and the end of the cut movement → error.
7. **Start of feeding**
8. **End of feeding**
   This status is send in case an additional feeding (dispenser, cutter, tear off) is released.
9. **Start of a print order**
10. **End of print order**
    This status signalizes the start and end of a complete print order (1…99999 labels). This status is active in all operating modes.
11. **Error**
    This status message is send in case an error occurs.
12. **Printing stopped**
    This message is send if the printing is stopped.
13. **Printing resumed**
    This message is send if the printing is resumed.

The printer sends the auto status in the following format to the host computer:

SOH	G	1. Byte	2. Byte	ETB

1. Byte

8. Bit = start of generation	4. Bit = start cutting
7. Bit = end of generation	3. Bit = end of cut
6. Bit = start printing	2. Bit = start feeding
5. Bit = end of print	1. Bit = always 0

2. Byte

8. Bit = end of label feed	4. Bit = free
7. Bit = start of print order	3. Bit = printing stopped
6. Bit = end of print order	2. Bit = printing resumed
5. Bit = error	1. Bit = always 0

NOTICE!

Bit 1 has to be in1. Byte and 2. Byte always 0, otherwise the printer possibly could recognize SOH or ETB.

At the status message of the printer to the host computer always at least 1 Bit is set. However, it could be occur that several Bits are set at the same time.

At the status demand of the host computer to the printer it is also possible that several Bits are set at the same time.

The auto status demand is saved in the printer, i.e. it is set to 0 after switching off/on. Therefore it is necessary to demand it anew after each time the printer is switched on.

Example

The printer should observe the start of a print order. For this the host computer sends the following demand to the printer.

SOH	G	00000000	01000000	ETB

After the condition is fulfilled (= start of the print order) the printer sends the following message to the host computer:

SOH	G	00000000	01000000	ETB

With regard to the contents the answer corresponds always to the format set.

12 Monitored Printing

This protocol replaces the outdated Autostatus. In contrary to the Autostatus, this is not a binary protocol but a text-based protocol sending the commands as English clear text. The advantage is a very fast and simple error tracing and development. The disadvantage of a larger data volume plays nowadays a smaller role.

12.1 Short Introduction

In order to activate monitored printing:

(SOH)FHM---rSE(ETB)

(SOH)FHA---r2(ETB)

12.2 Parameter Sets (Host – Printer)

Formatting: # - SOH * - ETB

Command: Set monitoring mode.
Syntax: #FHM---r*SEPnnnCnFn**
Example: #FHM---rSP10E*
Description: Activates the forwarding of certain events to the server. The results are:

S - (start/stop): print start, print end, stop printing, continue printing, cancel printing.

E – (error): Error occurred, error confirmed.

C – (photocell): Activates the photocell test (n=1)/disable (n=0)

F – Activates the encoder profile (n=1)/disable (n=0)

P – (progress): Print progress, indicates the number of already printed labels. In standard case, the interval between two events is a label. If a number behind the flag is indicated, an event every *nnn* labels is released (see example). With column printing the event is released, as soon as the entered interval was reached or exceeded for the first time (example: 3 columns, interval 4, 20 labels in total. Event at label 6,9,12 and 18).

Command: Activate, disable the monitoring.
Syntax: #FHA---r*n**
Example: #FHA---r2*
Description: activated, deactivates the monitoring (n=[0,2]);
‚0' – enables the monitoring after completion of print order,
‚1' – reserved
‚2' – activates the monitoring for the current port.

12.3 Direct Enquiry

Command: Requests print status.
Syntax: #FHS---r*
Example: #FHS---r*
Description: Invites the client to send the current status.

Command: User command to the sender of print order.
Syntax: #FHU---r*Daten**
Example: #FHU---rSE*
Description: Sends #*Data** to the sender of print order.
Max 100 characters.

12.4 Answer Sets (Printer – Host)

Event: Print start
Set: #HSStart-*Pagename-Labelsrequested**
Example: #HSStart-NoName1-100*
Description: Indicates the start of a print order, including page name and number of labels to be printed.

Event: Printing completed
Set: #HSDone-*Pagename-Labelsprinted**
Example: #HSDone-NoName1-100*
Description: Indicates the completion of a print order including page name and number of printed labels.

Event: Printing stopped
Set: #HSHold-*Pagename-Labelsprinted**
Example: #HSHold-NoName1-10*
Description: Indicates the stopping of print order including page name and number of printed labels. Occurs when the user stopped the print order and/or after occurance of an error.

Event: Continue printing
Set: #HSContinue-*Pagename-Labelsprinted**
Example: #HSContinue-NoName1-55*
Description: Indicates the continuation of print order including page name and number of printed labels. Occurs when the user restarts the print order.

Event: Cancel printing
Set: #HSAborted-*Pagename-Labelsprinted**
Example: #HSAborted-NoName1-57*
Description: Indicates the cancelation of printing including page name and number of printed labels.

Event: Error
Set: #HSError-*Pagename-Labelsprinted-ErrorID-Errormessage**
Example: #HSError-NoName1-57-28-Messerfehler*
Description: Indicates the occurance of an error including page name, number of printed labels, error ID and error text.

Event: Error confirmation at printer
Set: #HSAck-*Pagename-Labelsprinted* *
Example: #HSAck-NoName1-57*
Description: Indicates the confirmation of an error including page name and number of printed labels.

Event: Print progress
Set: #HSProgress-*Pagename-Labelsprinted* *
Example: #HSProgress-NoName1-60*
Description: Indicates the progress of print order including page name and number of printed labels. This event is also returned as answer to status enquiry, if the printer is printing.

Event: Photocell value
Set: #HSPhotocell-DLS:xxx-RLS:xxx*
Example: #HSPhotocell-DLS:3.8-RLS:1.9*
Description: Returns the values of transmission and reflexion photocell. The verification takes place every 5 ms; only changes are sent.

Event: Encoder profile
Set: # HSEnc-Dist:xxx-Speed:xxx*
Example: # HSEnc-Dist:120-Speed:202*
Description: Generates the profile of speed development of the packaging machine during a print order.

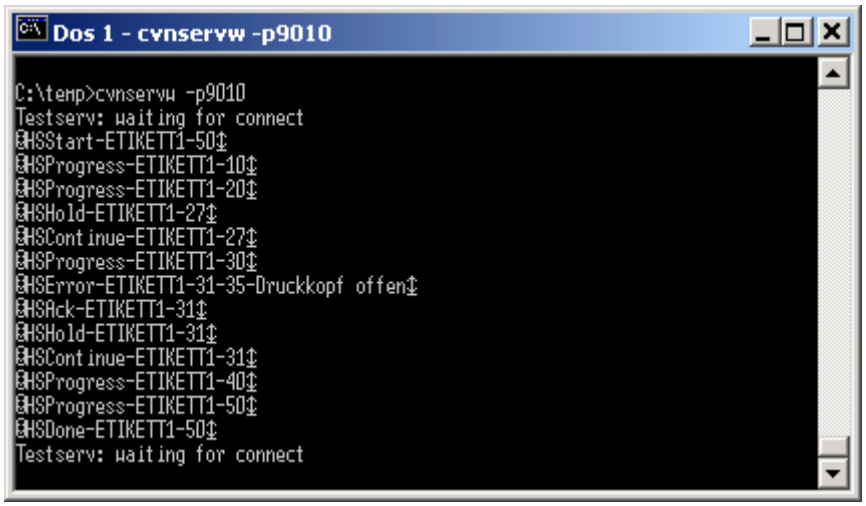
Event: Answer to status enquiry (#FHS---r*)
Description: The respective current print event is returned.

12.5 Sample Label

A simple label with monitoring of all parameters with output of the progress – all 10 labels could look as following:

```
FHM---rSP10E
//Ueberwachung einschalten
FHA---r2
// JOBNAME: "ETIKETT1"
FBE---rETIKETT1
// TYPE: Endlosetiketten
// HEIGHT: 20.00 mm
// GAPLENGTH: 2.00 mm
// COLUMNS: 1
// COLUMN DISTANCE: 100.00 mm
FCDA--r1-------
FCCL--r0002000-
FCCM--r00000---
FCCHA-r1-------
FCCHB-r999-----
// SPEED: 50 mm/s
FCAA--r050-----
// CONTRAST: 200%
FCAB--r200-----
// LABELCONTROL: 0
FCDE--r0-------
// RIBBONCONTROL: 1
// RIBBONSENS: 0
FCDB--r10------
// MATERIAL: Typ 1
FCDNA-r0-------
FCDNB-r1-------
FCDNC-r0000----
// SCAN MODE: 0
// SCAN PORT: 0
// NO READ: 0
// FEED LABEL: 0
FCDM--r0000----
// MIRROR LABEL: Nein
FCDO--r0-------
// TEXT (1/100 mm)
AM[1]1407;6907;0;4;0;3;398;398;8
BM[1]Test
// SETLINENO: 1 lines
FBAA--r1
// SETCOPIES: 1
FBBA--r00050---
// PRINT
FBC---r--------
```

The server output, for example, looks as follows:



13 Font Examples

13.1 Bitmap Fonts (not proportional)

Font 01 (8 x 11) Verhältnis 3:3
Font 02 (12 x 17) Verhältnis 3:3
Font 03 (18 x 26) Verhältnis 2:2
Font 04 (40 x 56) Verhältnis 1:1
Font 05 (18 x 32 mit Unterlängen) Verhältnis 2:2
Font 07 (12 x 22 mit Unterlängen) Verhältnis 2:2

13.2 Bitmap Fonts (proportional)

Font 21 (10 proportional) Verhältnis 3:3
Font 22 (18 proportional) Verhältnis 2:2
Font 23 (26 proportional) Verhältnis 2:2
Font 24 (56 proportional) Verhältnis 1:1
Font 28 (40 proportional) Verhältnis 1:1
Font 29 (8 proportional) Verhältnis 5:5

13.3 Vector Fonts

Absender (Baskerville)

Gold, Petra (Swiss Light)
Name, Vorname (Helvetica Bold)
Goldstraße 456 (Swiss Light)
Straße, Hausnummer (Helvetica Bold)
23456 Golddorf (Swiss Light)
PLZ, Ort (Helvetica Bold)

Das ist ein Musteretikett
für die Darstellung der
Schriftarten (Monospace)

Musterlieferung
Bitte bestätigen Sie
den Empfang. (Brush Script)

Empfänger (Baskerville)

Mustermann, Max (Helvetica Roman)
Name, Vorname (Helvetica Bold)
Musterstraße 123 (Helvetica Roman)
Straße, Hausnummer (Helvetica Bold)
45678 Musterstadt (Helvetica Roman)
PLZ, Ort (Helvetica Bold)

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Carl Valentin GmbH
Neckarstraße 78 – 86 u. 94 . 78056 Villingen-Schwenningen
Phone +49 7720 9712-0 . Fax +49 7720 9712-9901
info@carl-valentin.de . www.carl-valentin.de