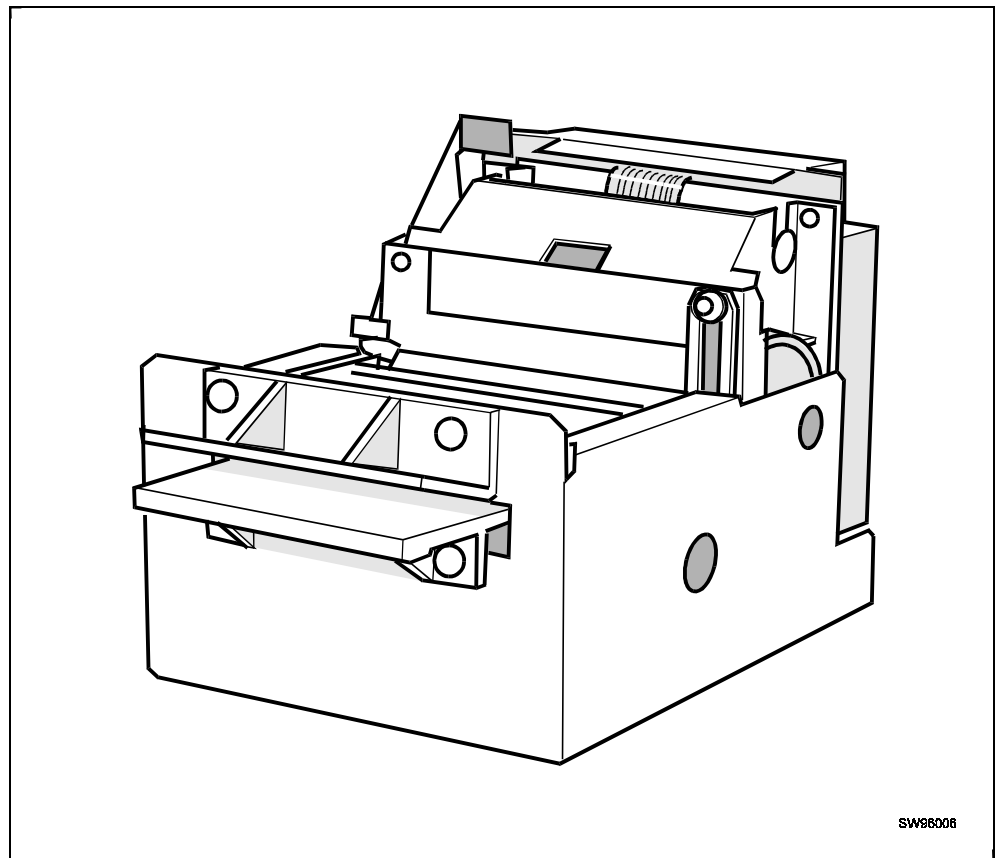


TTP 101 Kiosk Printer

Installation Manual



Related manuals

- **TTP 101 Technical Specification 38-1231-00 (old No. SWC-872)**
- **TTP Operating Instructions 38 1211-00 (old No. SWC-811)**
- **TTP 101 Service Manual 38-1221-00 (old No. SWC-811)**

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Second edition, August 1997

Printed in Sweden

CONTENTS

1 INTRODUCTION	3
1.1 About this manual	3
1.2 Updating.....	3
2 PRODUCT PRESENTATION	4
3 SUMMARY OF CONTROL CODES & ESCAPE SEQUENCES	5
3.1 Character and bit-image graphics commands.....	5
3.2 Label- and other top-of-form-oriented commands.....	6
4 SOFTWARE COMMAND SYNTAX	7
4.1 Character and bit-image-graphics commands.....	7
5 LABEL- AND OTHER TOP-OF-FORM ORIENTED PRINT	14
6 ERROR CODES	23
7 PRINTER INTERFACES	24
7.1 Control board SWC-842	25
7.1.1 Paper feed switch connector	25
7.1.2 Paper-low switch connector.....	26
7.1.3 Serial interface.....	26
7.1.5 Parallel interface	27
7.1.6 Power supply interface	27
7.2 Control board SWC-642	29
7.2.1 Paper feed switch	30
7.2.2 Serial interface.....	30
7.2.4 Parallel interface	31
7.2.5 Power supply interface	32
8 TEST PRINT FUNCTIONS	33
8.1 Self test off-line printout	33
8.2 HEX dump, on-line printout.....	34
9 BASIC CHARACTER SET	35
10 NATIONAL CHARACTER SETS	36
11 FIRMWARE HISTORY	37
12 INSTALLATION CONSIDERATIONS	38

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Please fill in the registration form inserted at the end of this manual and return it to us through mail or fax. This will put you on our mailing list for keeping you informed of product changes, manual updates etc.

Registration date (for your own records): _____

REVISION HISTORY

Page	Change
Back of title page	Publication numbers changed <i>TTP 101 Operating Instructions</i> added. Phone number changed, e-mail and web site addresses added.
3	Section 1.2: Information about BBS replaced by references to web site.
5	Commands ESC ENQ 2 and ESC ENQ 5 added.
7	Description of commands LF and CR modified.
9	Command ESC ENQ 2 added.
10	Command ESC ENQ 5 added
23	Note added
24 — 28	New control board SWC-842 added
29	Second paragraph: Connector J13 changed to J12 (typing error)
37	Firmware versions 1.18 — 1.20 added
38	Section <i>Installation Considerations</i> added

1 INTRODUCTION

1.1 About this manual

This manual contains the information required for installation of the printer and to run it from a host computer such as a PC.

The first chapter summarizes the applicable control codes and escape sequences supported by the printer processor firmware. The summary is followed by chapters describing the command syntax.

Other chapters of the manual contain information about the printer error codes, communications parameters, test print functions, specifications of the serial and parallel printer interfaces, etc.

This edition of the manual is valid for TTP 101 printers with serial number starting from **8506**.

1.2 Updating

This manual will be updated as, from time to time, printer functions and features may be added or amended. You will always find the latest edition on our web site (<http://www.swecoin.se>). Printed copies of the current manual edition can be ordered by e-mail, fax or phone.

Registered manual owners will be kept informed about new editions, product changes, etc. through our fax or e-mail bulletin service. To register as a manual owner, either fill in the form at the end of the manual or fill in the requested information when you visit the Technical Support section on our web site to download a manual.

If you require functions not found in the manual edition at your disposal, you are welcome to consult one of our offices for information.

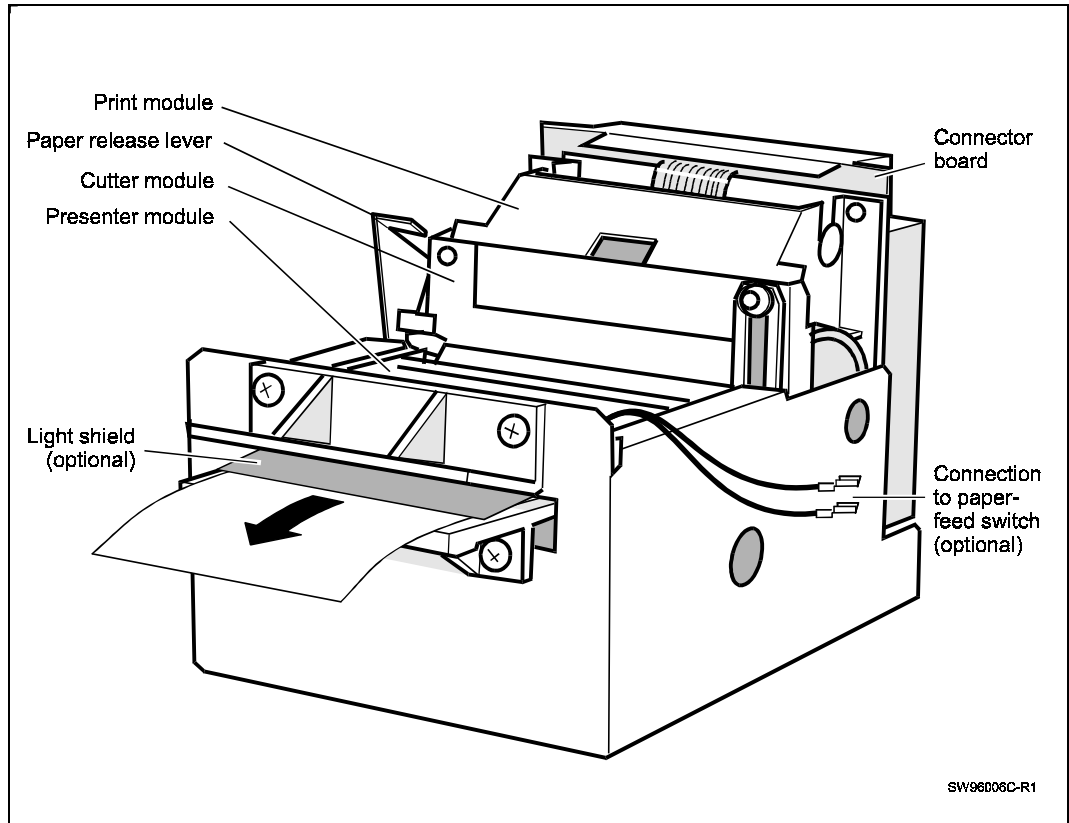


Figure 1. Printer exterior

3**SUMMARY OF CONTROL CODES & ESCAPE SEQUENCES****3.1 Character and bit-image graphics commands**

Command	Hex.	Decimal	Function	Page
LF	0A	10	Line feed	7
CR	0D	13	Carriage return	7
FF	0C	12	Form feed	7
RS	1E	30	Cut and eject paper	8
SI	0F	15	Reset from double-width print mode	8
SO	0E	14	Set double-width print mode	8
ENQ	05	5	Clear presenter	8
CAN	18	24	Clear input buffer	8
ESC @	1B 40	27 64	Reset, initialize	9
ESC C n1 n2	1B 43 n1 n2	27 67 n1 n2	Set page length	9
ESC ENQ 1	1B 05 01	27 5 1	Status inquiry	9
ESC ENQ 2	1B 05 02	27 5 2	Status enquiry, paper near end, serial	9
ESC ENQ 5	1B 05 05	27 5 5	Status enquiry, paper near end, parallel	10
ESC FF n	1B 0C n	27 12 n	Eject only (after cut)	10
ESC f n	1B 66 n	27 102 n	Presenter motor drive	10
ESC J n	1B 4A n	27 74 n	Paper advance	10
ESC l n	1B 6C n	27 108 n	Line feeds before cut	11
ESC M n1 n2	1B 4Dn1 n2	27 77 n1 n2	Top-of-form detection	21
ESC p nnnn	1B 70 nnnn	27 112 nnnn	Custom logotype print	11
ESC q n	1B 71 n	27 113 n	Burn time adjustment	11
ESC R n	1B 52 n	27 82 n	Select national character set	12
ESC RS	1B 1E	27 30	Cut only, no eject	12
ESC S n1 n2	1B 53 n1 n2	27 83 n1 n2	Select graphics mode	12
ESC SI	1B 0F	27 15	Reset from double height	13
ESC SO	1B 0E	27 14	Set double height print	13
ESC T n	1B 54 n	27 84 n	Reversed print on/off	13

3.2

Label- and other top-of-form-oriented commands

Command	Hex.	Decimal	Function	Page
ESC A n1n2n3	1B 41 n1n2n3	27 65 n1n2n3	Set document length	14
ESC BC b1	1B 42 43 b11	27 66 67 b1	Clear bar code area	14
ESC BS b1...b11	1B 42 53 b1...b11	27 66 83 b1...b11	Reset bar code block	15
ESC BW b1..NUL	1B 42 57 b1...00	27 66 87 b1...0	State bar code data	16
ESC DC d1	1B 44 43 d1	27 68 67 d1	Clear comment area	17
ESC DS d1...d7	1B 44 53 d1...d7	27 68 83 d1...d7	Reserve comment block	17
ESC DW d1..NUL	1B 44 57 d1...00	27 68 87 d1...0	Comment block data	18
ESC E	1B 45	27 69	Clear all label areas	18
ESC GC g1	1B 47 43 g1	27 71 67 g1	Clear graphics area	18
ESC GS g1...g8	1B 47 53 g1...g8	27 71 83 g1...g8	Reserve graphics area	19
ESC GW g1...gn	1B 47 57 g1...gn	27 71 87 g1...gn	Graphics data	19
ESC LC l1	1B 4C 43 l1	27 76 67 l1	Clear ruler line area	20
ESC LS l1...l10	1B 4C 43 l1...l10	27 76 83 l1...l10	Ruler line data	20
ESC P n1	1B 50 n1	27 80 n1	Print document (label)	21
ESC X n1 n2	1B 58 n1 n2	27 88 n1 n2	Sense top-of-form position	22
ESC Y n1 n2	1B 59 n1 n2	27 89 n1 n2	Set start position	22

4.1 Character and bit-image-graphics commands**LF****Line feed****(0AH), (10) decimal**

Prints the data in the input buffer in the current character mode and advances the paper according the selected character height (normal or double height set with commands ESC+SI and ESC+SO, page 13).

The command is ignored if immediately preceded by a CR.

CR**Carriage return****(0DH), (13) decimal**

Prints the data in the input buffer in the current character mode and advances the paper according the selected character height (normal or double height set with commands ESC+SI and ESC+SO, page 13).

If the input buffer contains only line space data, line feed is effected. If the buffer contains no data the printer does not react to this command.

FF**Form feed****(0CH), (12) decimal**

Prints the data from the input buffer and feeds the paper to the top of the next page as specified with command ESC+C+n1+n2 (see page 9).

The TTP 101 is placed in continuous print mode when turned ON or reset (command ESC @, see page 9). This also sets page length = 0, print lines = 0, and skip lines = 0).

RS

Record separate

(1EH), (30) decimal

Cuts the paper and feeds it until the presenter feed rolls pick up the paper edge.

For other eject lengths, use command combination ESC+RS (page 12) and ESC+FF (page 10).

SI

Shift in

(0FH), (15) decimal

Resets from double-width mode, set by command SO, to normal width mode. Valid in double-width mode only.

SO

Shift out

(0EH), (14) decimal

Sets double-width mode. The characters are printed in double width.

Normal-width and double-width characters can be combined on the same print line.

Double-width mode can be combined with double-height mode for printing of "quadruple" characters.

ENQ

Clear presenter and report status

(05H), (5) decimal

Used to clear the paper path in the presenter, for example, to eject a document not removed during the previous print/cut/eject operation. Status code ACK is returned as a result of a successful clearing. Error code NAK+01 means that the clearing failed. Also see Chapter 6.

CAN

Cancel

(18H), (24) decimal

Cancel any data previously stored in the input buffer. Commands issued on the same line as the CAN command are **not** canceled.

ESC+ @

Reset

(1BH)+(40H), (27)+(64) decimal

Terminates the processing and initializes the control board. The control board is reset to default values, same as at power ON.

Do not use this command as part of print data command strings.

ESC+C+n1+n2

Set page length

(1BH)+(43H)+n1+n2, (27)+(67)+n1+n2 decimal

Sets the page length valid in character mode.

A page consists of a printable area followed by a skip area at the bottom of the page. The printable area equals the page length n1 minus the skip area n2.

The command is ignored if n1 is smaller than n2 or equal to n2.

The printer is put into continuous print mode if n1 = 0.

n1 and n2 must be 1-byte hexadecimal or decimal numbers.

The printer is placed in continuous print mode when turned ON or reset.

ESC + ENQ + 1

Status inquiry

(1BH)+(05H)+(01H), (27)+(5)+(1) decimal

Status inquiry. Results in response ACK if all sensors are clear, NAK + code if one or more sensors report fault condition. See Chapter 6.

Compare with ENQ command which also clears the presenter module.

ESC + ENQ + 2

Status enquiry, paper near end (with serial interface)

(1BH)+(05H)+(02H), (27)+(5)+(2) decimal

This command requests a paper-near-end sensor (paper low) status from the printer in a 1-byte format.

Value = (00H) indicates "No paper"

Value = (01H) indicates "Paper present" at the sensor position

ESC + ENQ + 5**Status enquiry, paper near end (with parallel interface)****(1BH)+(05H)+(05H), (27)+(5)+(5) decimal**

This command requests a paper-near-end sensor (paper low) status from the printer in a 1-byte format as follows:

Value = (00H) indicates "No paper"

Value = (01H) indicates "Paper present" at the sensor position

ESC + FF + n**Eject only****(1BH)+(0CH)+n, (27)+(12)+n decimal**

Usually follows an ESC + RS command.

ESC+FF+n effects ejection of a previously cut-off document out of the presenter module. Parameter n represents the number of eject steps (maximum = 255), each one of approximately 2 mm length.

The primary use of this command is to determine if a document is to be fully or partially ejected (partly retained in the presenter module) or to partially eject a long document during ongoing processing, also without a preceding cut command.

ESC + f + n**Presenter motor drive selection****(1BH)+(66H)+n, (27)+(102)+n decimal**

n = 0 Default value. Presenter motor just catches the leading paper edge. If the printing continues, the paper will form an increasing loop until printing is completed.

n = 1 The leading paper edge is ignored by the presenter sensor and the paper is fed straight through the presenter module. This function can be turned on/off at any time during an ongoing operation.

ESC + J + n**Paper advance****(1BH)+(4AH)+n, (27)+(74)+n decimal**

The value n represents the number of dot lines (at 0.25 mm) at which the paper is to be transported forwards. Maximum value for n = 255, equal to approximately 32 mm.

ESC + l + n

Line feeds before cut

(1BH)+(6CH)+n, (27)+(108)+n decimal

Sets the number of line feeds to be executed before a cut-off.

Valid only in combination with the RS command.

ESC + p + nnnn

Logotype print

(1BH)+(70H)+nnnn, (27)+(112) nnnn decimal

Effects print of customized logotype stored in EPROM.

nnnn Represents a four-digit number assigned to customized logotype.

ESC + q + n

Burn time adjustment

(1BH)+(71H)+n, (27)+(113)+n decimal

Parameter n specifies the burn time for the thermal head resistors. This command adjusts the burn time to obtain the optimal print contrast with the paper quality in use. Each step n represents a pulse width adjustment of approximately 25 us.

n = 5 or 10 Default value (see Note below)

n = 1—15 Adjustment range. Adjustment should be done in small steps.

NOTE! At power-ON, the firmware senses whether there is a solder jumper in position SW4 (standard) and, if so, presets the burn time parameter value to **ESC q= 10**. The jumper should always be installed when **the printhead** is supplied with +20 V. This is the case in all TTP 101 printers from serial number 8506 since they have a built-in +20 V regulator.

With earlier printer versions, the solder jumper SW4 should be installed only if the printer control board is supplied with +20 V. If the supply voltage is between +20 V and +24 V, the solder jumper SW4 must be removed to prevent printhead damage. The burn time value will then be preset to the value **ESC q = 5** at power-ON but can be adjusted with the ESC q command during printing

SC + R + n**Select national character set**

(1BH)+(52H)+n, (27)+(82)+n decimal

Selects one of eight national character sets specified by n. Legitimate n values are listed below. Invalid values are ignored. Value 1 (USA) is set at power ON.

n = 1	USA
n = 2	Germany
n = 3	Great Britain
n = 4	France
n = 5	Spain
n = 6	Italy
n = 7	Sweden
n = 8	Denmark

ESC + RS**Cut paper**

(1BH) + (1EH), (27) + (30) decimal

Effects paper cut-off only.

Eject can be effected with the ESC + FF + n command (see page 10).

ESC+S+n1+n2**Select graphics mode**

(1BH)+(53H)+ n1+n2, (27)+(83)+n1+n2 decimal

Sets Bit Image Graphics Mode.

n1 and n2 High and low order byte. Determine the number of dot lines.

Both n1 and n2 must be 1-byte hexadecimal or decimal numbers

The printer is put in character mode if n1 = n2 = 0

Of commands issued before the ESC+S, only Reversed Printing (ESC+T+n) remains valid after execution of the ESC+S command.

In bit-image graphics mode, all ASCII character codes are interpreted and processed as bit-image data.

Data overflowing the specified print area are printed as ASCII characters. If less data than specified is received, the printer may enter a wait state, expecting further data. The printer may handle subsequent character code, or non-bit-image data, as bit-image data. The host computer must therefore supply 24 x (n1n2) data bytes, that is, 24 bytes per line times the number of dot lines to be printed.

ESC + SI

Reset double-height mode

(1BH)+(0FH), (27)+(15) decimal

Resets the printer from double-height mode to normal-height mode (double-height mode was set with the ESC+SO command). Valid only in double-height mode.

ESC + SO

Set double-height mode

(1BH)+(0EH), (27)+(14) decimal

Places the printer in double-height mode, printing double-height characters.

A print line cannot contain both normal-height and double-height characters, but double height can be combined with double width for "quadruple" characters.

ESC + T + n

Set reversed printing

(1BH)+(54H)+n, (27)+(84)+n decimal

Selects normal or reversed print mode.

n = 0 Gives normal print (black on white background)

n = 1 Gives reversed print (white on black background)

5**LABEL- AND OTHER TOP-OF-FORM ORIENTED PRINT**

This section discusses software commands used to print documents using functions such as label printing, bar code printing, enlarged character printing (comment block), landscape printing, graphics, ruler line and related functions.

ESC+A+n1+n2+n3	Set document (label) length
-----------------------	------------------------------------

(1BH)+(41H)+n1+n2+n3, (27)+(65)+n1+n2+n3 decimal

Determines the length of the document (label) to be printed.

The printer control board has approximately 6 K bytes of page memory available for data storage. With this page memory, the maximum available field length (lmax.) is 250 dot lines, equal to approximately 62 mm paper length.

n1 Specifies block No. (0—15). The total available document length can be divided into a total of 16 blocks. The blocks must be defined sequentially, starting at No. 0. Any n1 value other than 0—15 is ignored.

n2n3 Specifies effective document (label) length.
n2 = high order, n3 = low order
n2 and n3 are 1-byte hexadecimal or decimal numbers. The value specified by n2 and n3 must not exceed the maximum effective length specified above.

This command may be omitted if the block to be printed is positioned in block No. 0 only.

ESC + BC + b1	Clear bar code area
----------------------	----------------------------

(1BH)+"BC"+b1, (27)+"BC"+b1 decimal

This command clears the bar code block area reserved by the command ESC + BS.

b1 Specifies the bar code block No. (0—15). The blocks may be specified in any order but b1 values other than 0—15 are ignored.

(1BH)+ "BS"+b1+b2+...+b11, (27)+ "BS"+b1+b2+...+b11 decimal

Reserves a document block identified by the ESC + A command as a bar code area. The command also identifies the type, number of digits and the configuration of bars to be placed in the bar code area.

b1 Specifies the bar code block No. (0—15). The blocks may be specified in any order. Any value other than 0—15 is ignored.

b2b3 Specifies the X coordinate of the bar code block position. Parameter b2 is the higher order and b3 the lower order byte).

Parameters b2 and b3 must be 1-byte hexadecimal or decimal numbers. The value specified by b2b3 must not exceed the total dot count (24 bytes) that can be handled by the printer mechanism.

b4b5 Specifies the Y coordinate of the bar code block position. Parameter b4 is the higher order and b5 the lower order byte.

Parameters b4 and b5 must be 1-byte hexadecimal or decimal numbers. The value specified by b4b5 must not exceed the effective length specified in the ESC+ A command.

b6 Specifies the number of bar code digits.

b7b8 Specifies the height of the bars. Parameters b7 and b8 must be 1-byte hexadecimal or decimal numbers. The value specified by b7 and b8 must not exceed the effective length specified in the ESC + A command.

b9 Specifies the type of bar code. The following bar code types are supported.

b9 = 0, EAN 13 and UPC-A (no sub-titles, insufficient space in nominal size)

b9 = 1, EAN 8

b9 = 6, Code 39

b9 = 8, Code 128

b9 = 9, EAN 128

Note:

For EAN codes, the printer calculates the necessary check digit.

For Code 39, the start and stop character "" is generated by the printer.*

For UPC-A, use b9 value = 0 and insert a prefix "0" before the 11-digit data string.

b10 Specifies the thickness of the narrow bar.

0 = 1 dot 3 = not applicable 6 = 7 dots
 1 = 2 dots 4 = 5 dots 7 = 8 dots
 2 = 3 dots 5 = 6 dots

All other values are invalid.
 For EAN bar codes, only values 0 and 1 apply

b11 Specifies the ratio of wide bar to narrow bar.

b11 value	Narrow bar	Wide bar
0	1	1,5
1	1	2
2	1	2,5 (may be difficult to read)
3	1	3
4	1	3.5

The lower three bits of the b11 byte are significant (some ratio values may not be processed properly). The above values serve only as guidance values. For EAN bar code, a fixed ratio applies.

ESC+BW+b1+b2...+NUL	State bar code data
----------------------------	----------------------------

(1BH)+ "BW"+b1+b2...+(00H), (27)+ "BW"+b1+b2...+0 decimal

Fills the bar code area reserved by the ESC+BS command with bar code data to be printed.

- b1 Specifies the block (0—15). Blocks can be specified in any order but other values than 0—15 are ignored.
- b2... Specifies bar code data bytes.
- NUL Must be placed at the end of the bar code data.

Any invalid bar code character terminates the command.

Print-out is effected by an ESC + P command.

ESC+DC+d1**Clear comment block area****(1BH)+"DC"+d1, (27)+"DC"+d1 decimal**

Clears the comment block area reserved by the ESC+DS command.

d1 Specifies the comment block (0—15) to be cleared. Comment blocks can be specified in any sequence but other values than 0—15 are ignored.

Of command codes specified before this command, only ESC+T+n (reverse printing) remains in effect after execution of ESC+DC+d1.

ESC+DS+d1+d2+...+d7**Reserve comment block area****(1BH)+"DS"+d1+d2..., (27)+"DS"+d1+d2... decimal**

Reserves a comment block area within a document length defined by the ESC+A command. The command also specifies the type, orientation and number of comment columns to be placed in the comment block area.

d1 Specifies comment block number (0—15). Comment blocks can be specified in any sequence but other values than 0—15 are ignored.

d2d3 Specifies the X coordinate of the comment block position, (d2 is the higher and d3 the low order byte). Parameters d2 and d3 must be 1-byte hexadecimal or decimal numbers. The value specified by d2d3 must not exceed the total dot count (24 bytes) that the printer mechanism can handle.

d4d5 Specifies the Y coordinate of the comment block position, (d4 is the higher and d5 the low order byte) and must be expressed in 1-byte hexadecimal or decimal numbers. The value specified in d4d5 must not exceed the effective length specified in the ESC+A command.

d6 Specifies the number of comment columns.

d7 Specifies the size of the comment characters

d7	Character size
----	----------------

0	24 x 16 dot matrix
---	--------------------

1	24 x 32 dot matrix
---	--------------------

2	48 x 16 dot matrix
---	--------------------

3	48 x 32 dot matrix
---	--------------------

Only one type of character can appear in one comment block and only in portrait orientation.

ESC+DW+d1+d2...+NUL

State comment block data

(1BH)+ "DW"+d1+d2...+(00H), (27)+ "DW"+d1+d2...+0 decimal

Fills the comment block area reserved by the ESC+DS command with comment data.

d1 Specifies the comment block number (0—15) that can be specified in any sequence. Values other than 0—15 are ignored

d2... Specifies one or more comment data bytes

NUL Must be placed at the end of the comment data. Any invalid command character terminates the ESC+DW command.

Of commands specified before ESC+DW, only ESC+T+n (reverse printing) remains in effect after execution of the ESC+DW command.

Print-out is effected by an ESC + P command.

ESC + E

Clear all label areas

(1BH)+(45H), (27)+(69) decimal

Clears all label areas.

Of command codes specified before this command, only ESC+T+n (reverse printing), remains in effect after execution of ESC+E.

ESC+GC+g1

Clear graphics area

(1BH)+ "GC"+g1, (27)+ "GC"+g1 decimal

Clears graphics block area reserved by the ESC+GS command.

g1 Specifies graphics block (0—15) in any sequence. Values other than 0—15 are ignored.

Of command codes specified before this command, only ESC+T+ (reverse printing) remains in effect after execution of ESC+GC.

ESC+GS+g1+g2+...+g8**Reserve graphics block area**

(1BH)+"GS"+g1+g2+...+g8, (27)+"GS"+g1+g2+...+g8 decimal

Reserves a block area defined in an ESC+A command as a graphics block area. The command also defines the size of the graphics block.

- g1 Specifies graphics block number (0—15). Graphics blocks may be specified in any order but values other than 0—15 are ignored.
- g2g3 Specifies X coordinate of the graphics block position. Parameter g2 is the high-order and g3 the low-order byte. Parameters g2 and g3 must be 1-byte hexadecimal or decimal numbers, and the value specified must not exceed 192 dots, the total dot count that can be handled by the printer mechanism.
- g4g5 Specifies the Y coordinate of the graphics block position. Parameter g4 is the high-order and g5 the low-order byte and they must be 1-byte hexadecimal or decimal numbers. The value specified by g4g5 must not exceed the effective length specified in the ESC + A command.
- g6 Specifies the number of bytes (maximum 24) in the X-direction
- g7g8 Specifies the number of lines in the Y-direction. Parameter g7 is the high-order and g8 the low-order byte. Parameter g7g8 must be 1-byte hexadecimal or decimal numbers. The value specified by g7g8 must not exceed the effective length specified by ESC+A.

ESC+GW+g1+g2+...+gn**State graphics data**

(1BH)+"GW"+g1+g2+...+gn, (27)+"GW"+g1+g2+...+gn decimal

Fills the graphics block area reserved by the ESC+GS command with graphics data.

- g1 Specifies graphics block number (0—15) in any order. Other g1 values than 0—15 are ignored.
- g2... Graphics data. Number of data bytes g2....gn: (number of bytes in X direction) multiplied by number of lines in Y direction.

All ASCII characters and control codes are invalid. The printer will process any code as bit image data. Any data overflowing the graphics block specified with command ESC+ GS is ignored.

If less data than specified is received, the printer may either enter a wait state, waiting for further data, or it may handle subsequent character codes or non-bit-image data as bit image data. The host computer must supply as much data as specified by ESC+GS.

Of command codes specified before this command, only ESC+T+n (reverse printing) remains in effect after execution of the ESC+GW command.

Print-out is effected by an ESC + P command.

(1BH)+ "LC"+I1, (27)+ "LC"+I1 decimal

Clears ruler line area

I1 Specifies ruler line No. (1—15) in any order. Values other than 0—15 are ignored.

Of command codes specified before this command, only ESC+T+n remains valid after execution of this command.

(1BH)+ "LS"+I1+I2...+I10, (27)+ "LS"+I1+I2+...+I10 decimal

Draws a horizontal or vertical ruler line in the block area defined by the ESC + A command. The command also defines the thickness of the ruler line.

I1 Specifies the ruler line number (0—15) in any order. Values other than 0—15 are ignored.

I2I3 Specifies the X coordinate of the ruler line starting point (I2 is the high-order and I3 the low-order byte). I2 and I3 must be 1-byte hexadecimal or decimal numbers. The value specified by I2 and I3 must not exceed the total dot count that can be handled by the printer.

I4I5 Specifies the Y coordinate of ruler line starting point (I4 is the high-order and I5 the low-order byte). I4 and I5 must be 1-byte hexadecimal or decimal numbers and the value specified by I4I5 must not exceed the effective length specified in the ESC + A command.

I6I7 Specifies the X coordinate of the end of the ruler line (I6 is the high-order and I7 the low-order byte). I6 and I7 must be 1-byte hexadecimal or decimal numbers and the value specified by I6I7 must not exceed the total dot count that can be handled by the printer mechanism.

I8I9 Specifies the Y coordinate of the end of the ruler line (I8 is the high-order and I9 the low-order byte). I8 and I9 must be 1-byte hexadecimal or decimal numbers. The value specified by I8I9 must not exceed the effective length specified in the ESC + A command.

I10 Specifies the thickness of the ruler line:

0 = 1 dot	3 = 4 dots	6 = 7 dots
1 = 2 dots	4 = 5 dots	7 = 8 dots
2 = 3 dots	5 = 6 dots	

The lower 3 bits of the I10 byte are significant.

I2I3 must be smaller than I6I7.

I4I5 must be smaller than I8I9.

Any invalid parameter combination is ignored.

The printer cannot draw slanted lines

Of commands specified before the ESC + LS command, only ESC + T (reversed printing) remains in effect after execution of ESC + LS.

Print-out is effected by an ESC + P command.

ESC + M+n1+n2	Top-of-form detection
----------------------	------------------------------

(1BH)+(4DH)+n1+n2, (27)+(77)+n1+n2 decimal

Identifies maximum (n1) and minimum (n2) length respectively of the TOF (Top-of-Form) mark printed on the reverse side of the paper. The length is expressed in dot lines at 0.25 mm. The TOF mark is used for identification of the top-of-form for the next document.

Active transition is from "black" to "white".

n1 maximum valid value is 160 dot lines (20 mm)

n1 minimum valid value is 15 dot lines (1.8 mm)

n1 Default value = 30 dot lines at 0.25 mm

n2 Default value = 12 dot lines at 0.25 mm.

ESC + P + n1	Print document (label)
---------------------	-------------------------------

(1BH)+(50H)+n1, (27)+(80)+n1 decimal

Prints a document (label).

n1 Specifies document number (0—15) of the document (label) to be printed.

n1 value = <7FH> (or decimal <127>) specifies that all document (label) areas are to be printed (approximately 50 Kbytes of page memory).

Any n1 value other than those indicated here are ignored.

ESC + X + n1 + n2

Sense top-of-form position

(1BH)+(58H)+n1+n2, (27)+(88)+n1+n2 decimal

Reports if a TOF (Top-Of-Form) marker is sensed within the area specified by n1n2, starting at the current position.

n1n2 Specifies the area to be searched for TOF marker. n1 is the high-order and n2 the low-order byte. Parameter n1n2 must be 1-byte hexadecimal or decimal numbers.

ESC + Y + n1 + n2

Set document (label) starting position

(1BH)+(59H)+n1+n2, (27)+(89)+n1+n2 decimal

Defines the number of dot lines between the top of form position and the position at which the printing is to start. The printer advances the paper by the number of dot lines specified in this command before printing starts.

n1n2 Specifies the number of dot lines by which the paper is to be transported forwards before printing starts. n1 is the high-order and n2 the low-order byte. n1 and n2 must be 1-byte hexadecimal or decimal numbers.

The printer returns error code NAK+03 (see Chapter 6) if a paper-out condition occurs while the printer is feeding the paper as specified by n1n2 in this command.

The paper feed length specified by n1n2 must be greater than or equal to the width of the TOF marker. The printer will return error code NAK+03 if the paper feed length is less than the width of the TOF marker (in paper transport direction).

ERROR CODES

The printer is equipped with a number of sensors that report the printer status and various error conditions such as out-of-paper, previous printout not removed, etc.

In serial interface applications, the software commands ENQ and ESC ENQ 1 can be used to obtain status codes from the printer.

Sending an ENQ (05H) *Clear Presenter and Report Status*, to the printer, results in the printer sending a status report to the host computer. This status report reflects the status of the available sensors in the printer and identifies possible error conditions. The table below shows the status report obtained as a response to the ESQ command.

Status/error code	Meaning
ACK	OK (printer is operable)
NAK + 01	Paper left in presenter module. Attempt to clear the paper path failed.
NAK + 02	Cutter not in home position
NAK + 03	Printer out of paper
NAK + 04	Print head lifted

A status inquiry command can only return one status code at a time. If there are two or more simultaneous errors, each error condition should be cleared and the status inquiry repeated in order to get a complete report of all status codes.

The host computer cannot be certain that all error conditions have been cleared until an ACK is received.

The possible error conditions are reported in the above order.

NOTE! *NAK + error code will always be generated automatically when someone raises the paper release lever (printhead lifted) and when the printer runs out of paper (paper end).*

PRINTER INTERFACES

For optimum mounting flexibility, the printer control board is designed as a separate module. The control board can be placed at a distance of up to approximately 0.35 m from the printer and connects to the printer by means of a flat cable (part number 90-0774-000).

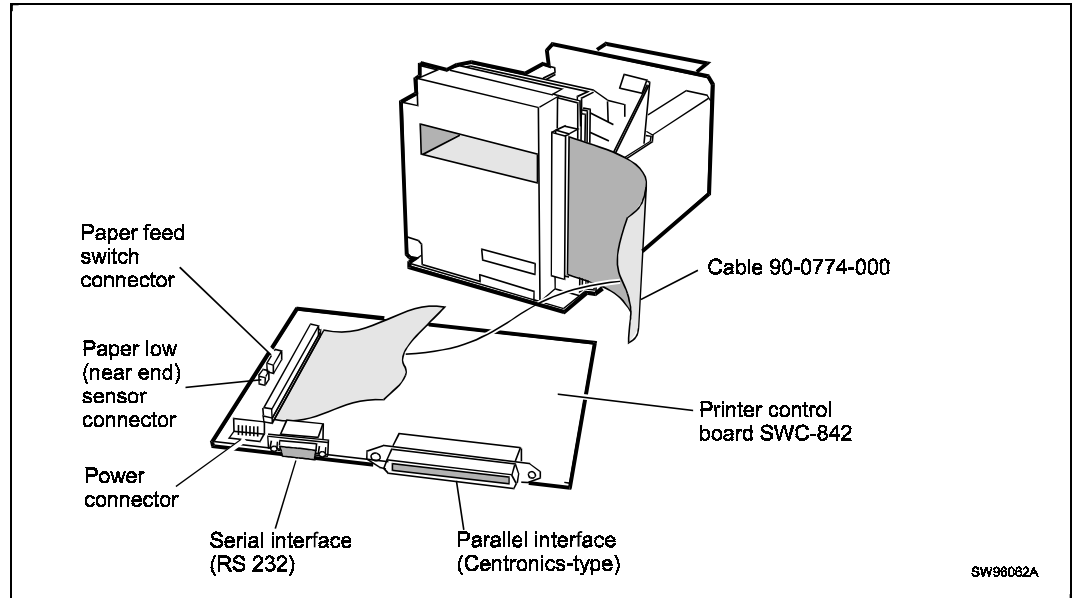


Figure 2. Printer interfaces, control board SWC-842

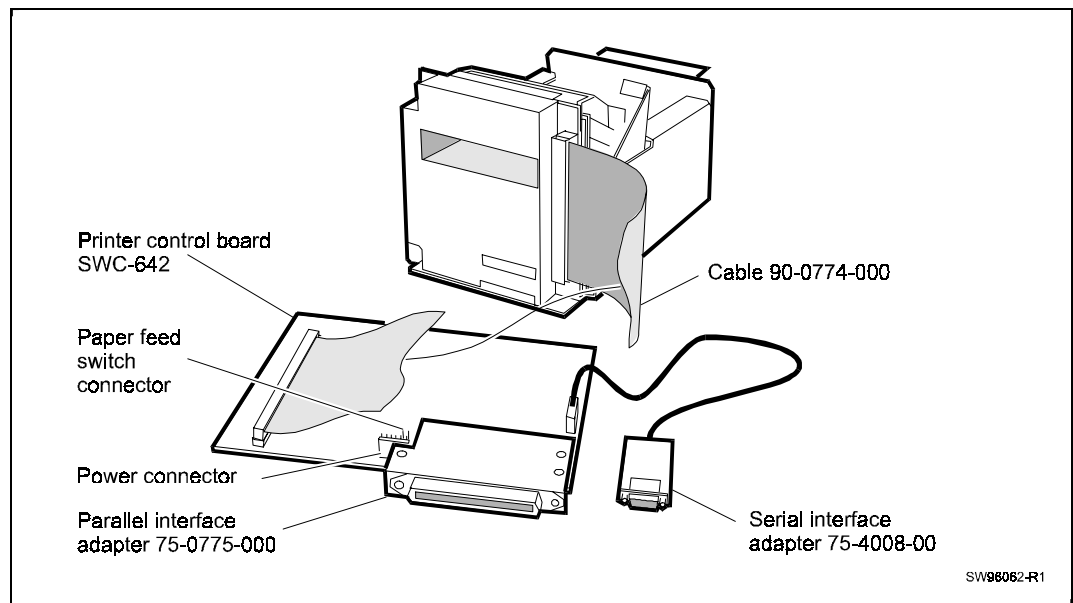


Figure 3. Printer interfaces, control board SWC-642 (previous design)

7.1

Control board SWC-842

The following figure shows the SWC-842 control board connectors.

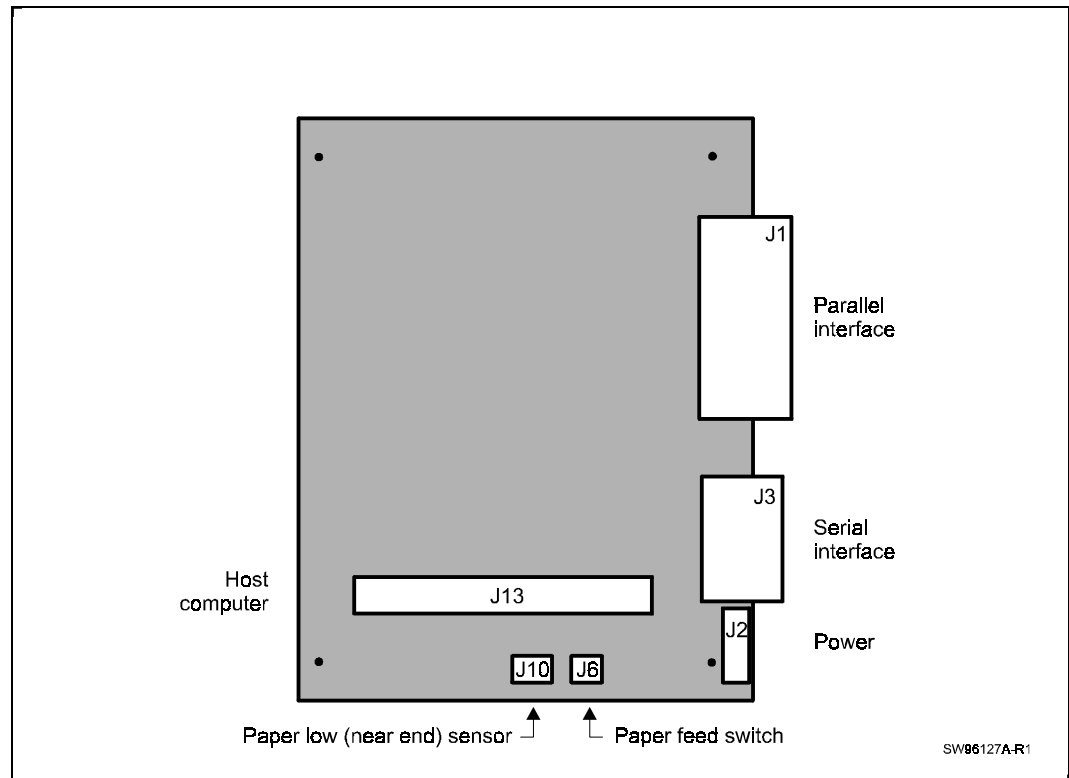


Figure 4. SWC-842 control board connectors

NOTE! Paper feed switch paper-low sensor are not included with the printer.

7.1.1

Paper feed switch connector

A paper feed switch (normally open) should be connected to J10 (2.54 mm grid) on the SWC-842 control board.

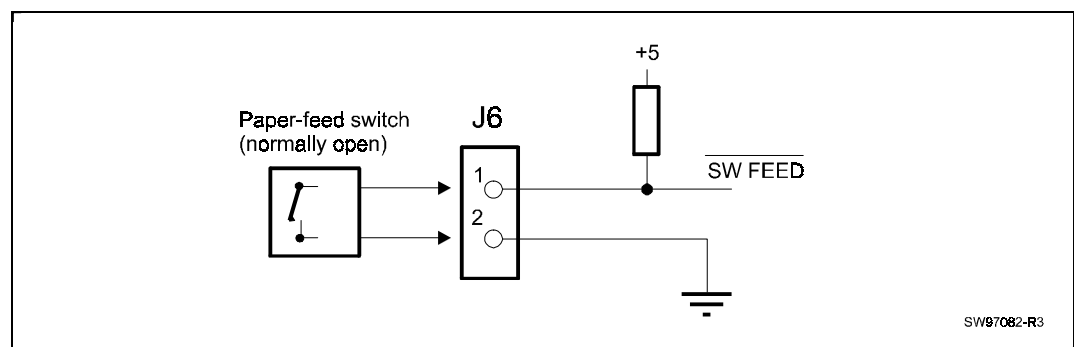


Figure 5. Paper-feed switch interface

7.1.2

Paper-low switch connector

A paper-low sensor can be connected to J16.

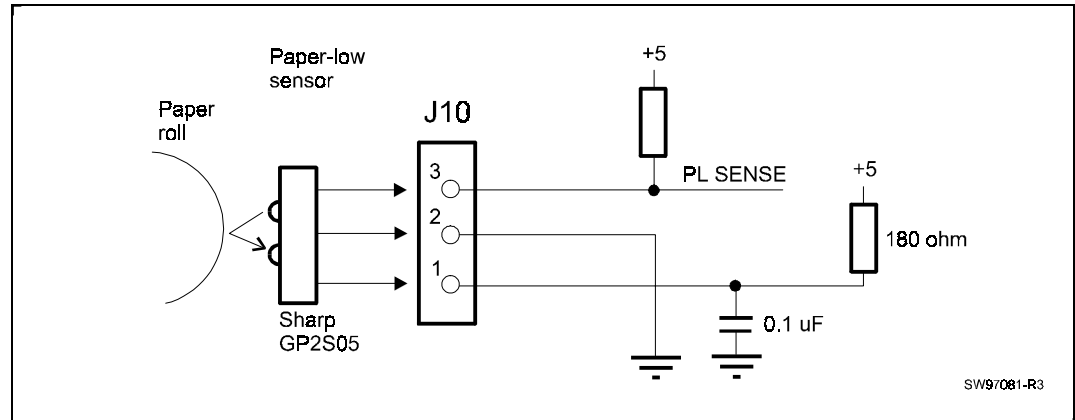


Figure 6. Paper-low sensor interface

7.1.3

Serial interface

The following table shows the pin assignment of the 9-pin D-sub connector J3:

J3	Signal name	Direction	Description
2	RXD	To printer	Receive data
3	TXD	From printer	Transmit data
4	DTR	—	Data terminal ready
5	GND	—	Ground
7	RTS	From printer	Request to send

The printer indicates that it is powered ON by setting DTR high. When initialized, RTS will be set high to indicate to the host that the printer is ready to receive data. RTS will be set low when the receive buffer is almost full, thereby telling the host to stop sending data until RTS is pulled high again.

The serial interface communication protocol and handshaking parameters are as follows:

Data format 8 data bits, 1 start bit, 1 stop bit, no parity (fixed)

Transmission speed 9600 baud (fixed)

Handshaking Hardware (RTS/CTS) and software (XON/XOFF)

NOTE! Hardware and software handshaking are both active at all times. This allows the use of either of them depending on the configuration of the communication cable between printer and host.

7.1.5

Parallel interface

The following table shows the pin assignment in the 36-pin Amphenol connector J1 on the SWC-842 control board. Signal names starting with a "/" are active LOW signals. The signal timing emulates the Centronics-type parallel printer interface.

J1	Signal	Direction	Description
1	/STROBE	To printer	Strobe signal
2	D0	To printer	Data bit 0
3	D1	To printer	Data bit 1
4	D2	To printer	Data bit 2
5	D3	To printer	Data bit 3
6	D4	To printer	Data bit 4
7	D5	To printer	Data bit 5
8	D6	To printer	Data bit 6
9	D7	To printer	Data bit 7
10	/ACK	From printer	Acknowledge signal
11	BUSY	From printer	Busy signal
12	Paper out	From printer	Paper out signal
13	/ERROR	From printer	Error signal
19—30	GND		
31	/Init	To printer	Printer initialization
32	/ERROR	From printer	Error signal
33—35	GND		

7.1.6

Power supply interface

Power to the printer is to be supplied through SWC-842 control board connector J2 .
Connector type: MOLEX KK, 2.54 mm grid

Pin	Function	Pin	Function
1	+5 VDC	4	+24 VDC
2	GND	5	GND
3	+24 VDC	6	GND

Voltage	Print mode	Current
+24 VDC	Standard text encoding/printing	2A average
+24 VDC	All black printing	6A (35% duty cycle)
+5 VDC		300 mA

⚠ CAUTION !

*The order in which the +5 VDC and +24 VDC are established on the printer control board is essential. The + 5 VDC must be established before the + 24 VDC drive voltage is brought to the board (and vice versa at power-off). Otherwise, **there is a risk of damaging both the printer control board and the thermal print head.***

Power supply units for evaluation purposes are available from Swecoin Promakon AB.

7.2

Control board SWC-642

The figure below shows the connectors on the SWC-642 control board (a previous design).

If the printer is connected through a flat cable to J13, the other connectors (except J12 and, possibly, J10) should not be used.

J1	Print head thermistor	J11	Print head lifted sensor
J2	Power supply	J12	Paper feed switch (normally open, 2.54 mm grid)
J4	Print module motor	J13	Printer (through 50-pole flat cable, replaces all connectors except J12 and, possibly, J10)
J6	Cutter motor	J14	Print head
J7	Presenter motor	J15	Serial interface, TTL-level
J8	Paper end sensor	J16	Parallel interface pin ramp
J9	Presenter sensor		
J10	Paper-low sensor (optional)		

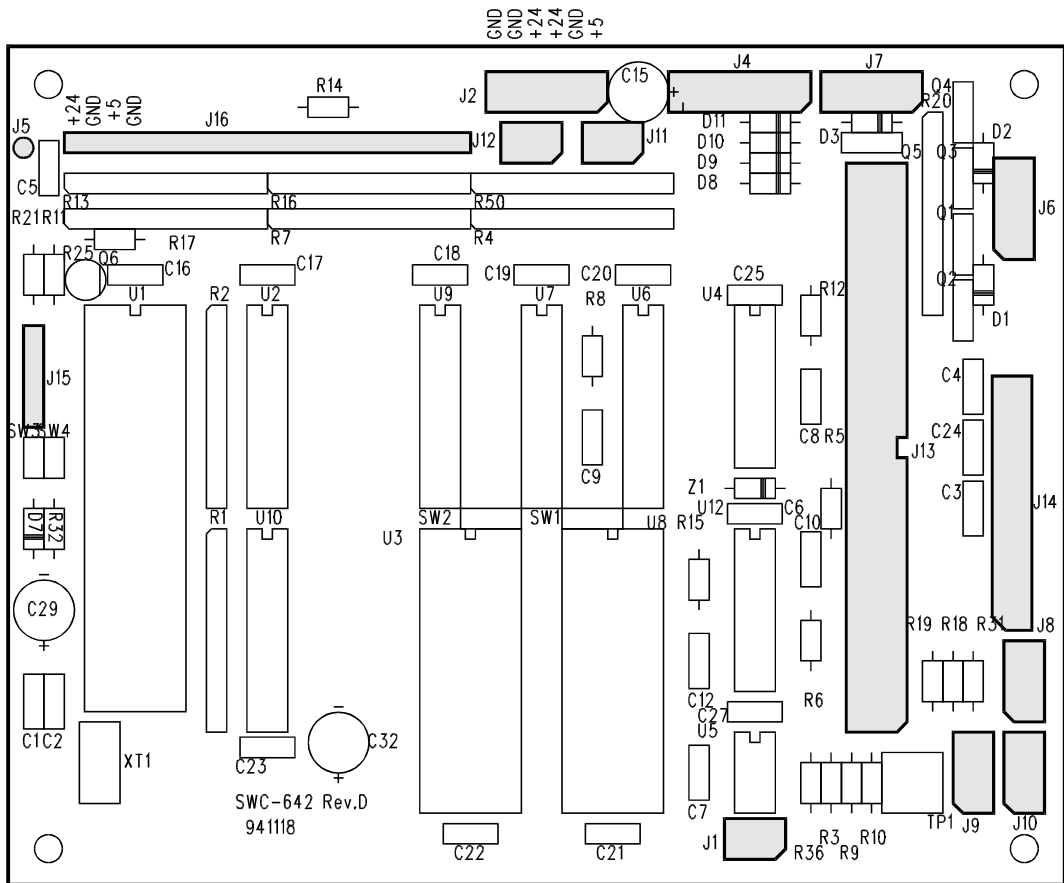


Figure 7. Control board SWC-642

7.2.1 Paper feed switch

A paper feed switch (normally open) should be connected to connector J12 (2.54 mm grid) on the SWC-642 control board.

7.2.2 Serial interface

The SWC-642 control board has a 5-pole serial interface connector (J15) with TTL-level signals.

An RS232 (V.24) serial interface adapter with a standard male 9-pin D-sub connector (see Figure 3) is available (part number 75-4008-00). The adapter is included if the printer version adapted for the RS 232 serial interface is ordered.

The following table shows the pin assignment of J15 and the 9-pin D-sub connector:

Conn. J15	9-pin D-sub	Signal name	Direction	Description
1		+5V		Power to interface adapter
2	3	TXD	From printer	Transmit data
3	2	RXD	To printer	Receive data
4	4	DTR	From printer	Data terminal ready
5	5	GND		Ground
	7	RTS	From printer	Request to send

The printer indicates that it is powered ON by setting DTR high. When initialized, RTS will be set high to indicate to the host computer that the printer is ready to receive data. RTS will be set low when the receive buffer is almost full, thereby telling the computer to stop sending data until RTS is pulled high again.

The following table shows alternative ways of designing an interface cable to be connected between a PC and J15 on the printer control board or between a PC and the serial adapter D-sub connector.

Printer (J15 or serial adapter D-sub conn.)	PC		
	Circuit	25-p. D-sub	9-p. D-sub
RXD	TXD	2	3
TXD	RXD	3	2
RTS	CTS	5	8
DTR	DSR	6	6
GND	GND	7	5

The serial interface communication protocol and handshaking parameters are as follows:

<i>Data transfer rate</i>	9600 baud (fixed)
<i>Data format</i>	8 data bits, 1 start bit, 1 stop bit, no parity (fixed)
<i>Hardware handshaking</i>	RTS/CTS
<i>Software handshaking</i>	XON/XOFF

NOTE! Both hardware and software handshaking are active at all times and, therefore, allow the use of either of them depending on the configuration of the communication cable between the printer and the host.

7.2.4

Parallel interface

Operating the printer through the parallel interface of the SWC-642 control board can be done through the single-in-line connector J16, but is facilitated by the use of a parallel interface adapter with a 36-pole Amphenol connector (see Figure 3). The adapter (part number 75-0775-000) is to be mounted on to connector J16.

The adapter is included if the printer order specifies the version adapted for parallel interface.

The following table shows the pin assignment of J16 and the corresponding poles in the 36-pin Amphenol connector. Signal names starting with a "/" are active LOW signals. The signal timing emulates the Centronics-type parallel printer interface.

(The table continues on the next page)

Pin ramp J16	Centronics	Signal	Direction	Description
1		+24V	To printer	Should not be used
2		GND		Should not be used
3		+5V	To printer	Should not be used
4	19—30, 33—35	GND		
5	1	/STROBE	To printer	Strobe signal
6	2	D0	To printer	Data bit 0
7	3	D1	To printer	Data bit 1
8	4	D2	To printer	Data bit 2
9	5	D3	To printer	Data bit 3
10	6	D4	To printer	Data bit 4
11	7	D5	To printer	Data bit 5
12	8	D6	To printer	Data bit 6
13	9	D7	To printer	Data bit 7

Pin ramp J16	Centronics	Signal	Direction	Description
14	10	/ACK	From printer	Acknowledge signal
15	11	BUSY	From printer	Busy signal
16	12	Paper out	From printer	Paper out signal
17	13, 32	/ERROR	From printer	Error signal
18	31	/Init	To printer	Printer initialization

7.2.5

Power supply interface

Power to the printer is to be supplied through SWC-642 control board connector J2 .
Connector type: MOLEX KK, 2.54 mm grid

Pin	Function	Pin	Function
1	+5 VDC	4	+24 VDC
2	GND	5	GND
3	+24 VDC	6	GND

Voltage	Print mode	Current
+24 VDC	Standard text encoding/printing	2A average
+24 VDC	All black printing	6A (35% duty cycle)
+5 VDC		300 mA



CAUTION !

*The order in which the +5 VDC and +24 VDC are established on the printer control board is essential. The + 5 VDC must be established before the + 24 VDC drive voltage is brought to the board (and vice versa at power-off). Otherwise, **there is a risk of damaging both the printer control board and the thermal print head.***

Power supply units for evaluation purposes are available from Swecoin Promakon AB.

TEST PRINT FUNCTIONS

The following two types of test prints can be obtained:

- Off-line self test printout
- On-line HEX dump (printout) of data transfer

The two printout alternatives described below apply to a printer having a paper feed switch button connected to the control board. See Figure 4 and Figure 7 for connector number and position.

If there is no paper feed button installed (during maintenance for example), short circuiting the connector pins will have the same effect as pressing the button.

8.1

Self test off-line printout

1. Verify that the power to the control board is switched OFF.
2. Push the paper feed button and keep it depressed.
3. Switch the power ON and keep the paper feed button depressed for at least 5 seconds. This produces a printout showing the firmware program (PROM) version, number of dots in the printhead, burn time, maximum characters per line, and (repeatedly) all characters in the character generator.
4. Release the paper feed button to stop the printing. The printer cuts and ejects the document, but remains in the self test mode. Renewed actuation of the paper feed button produces a demo test print-out followed by cut and eject.
5. Exit the self test mode by switching the power OFF.

Note! — *The printer is off-line and cannot receive any data while in the self test mode.*

8.2

HEX dump, on-line printout

This function makes it possible to analyze the data received by the printer which should be very valuable during the design of the application software.

Use the following procedure to change the printer mode:

1. Verify that the power is switched OFF.
2. Lift the print head release lever to upright position.
3. Depress the paper feed button and keep it depressed.
4. Power ON the printer.
5. Release the paper feed button.
6. Lower the print head release lever. The printer is now in a HEX dump mode and all on-line communication will be printed in both HEX format and ASCII character format on each line.
7. Depress the paper feed button temporarily. This ensures that the last transmitted characters are printed. The printer cuts the paper and feeds it out.
8. Exit from the HEX dump mode by switching the printer OFF. Switch the power ON again to resume normal on-line operation.

9

BASIC CHARACTER SET

The table below shows the basic characters stored in PROM on the printer control board. The characters in the shaded positions can be substituted with characters from one of several national character sets. See page 36.

	Hex (1st digit)	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Hex. (2nd digit)	Dec. value (horiz. + vert.)	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240
0	0				0	3	P	8	p	Ç	É	á	☒	⊥	⊥	α	≡
1	1			!	1	A	Q	a	q	ü	æ	í	☒	⊥	⊥	β	±
2	2			"	2	B	R	b	r	é	Æ	ó	☒	⊥	⊥	Γ	≥
3	3			1	3	C	S	c	s	â	ô	ú	|	⊥	⊥	π	≤
4	4			2	4	D	T	d	t	ä	ö	ñ	⊥	-	⊥	Σ	|
5	5			%	5	E	U	e	u	à	ò	Ñ	⊥	⊥	⊥	σ	|
6	6			&	6	F	V	f	v	â	û	ª	⊥	⊥	⊥	μ	÷
7	7			'	7	G	W	g	w	ç	ù	º	⊥	⊥	⊥	τ	≈
8	8			(	8	H	X	h	x	ê	ÿ	¿	⊥	⊥	⊥	Φ	°
9	9			)	9	I	Y	i	y	ë	Ö	⊥	⊥	⊥	⊥	Θ	•
A	10			*	:	J	Z	j	z	è	Ü	⊥	⊥	⊥	⊥	Ω	·
B	11			+	;	K	4	k	9	ï	ø	½	⊥	⊥	■	δ	√
C	12			,	<	L	5	l	10	î	£	¼	⊥	⊥	■	∞	∞
D	13			-	=	M	6	m	11	ì	Ø	¡	⊥	=	■	∅	²
E	14			.	>	N	7	n	12	Ä	Pt	«	⊥	⊥	■	ε	■
F	15			/	?	O	-	o	Δ	Å	f	»	⊥	⊥	■	∩	□

NATIONAL CHARACTER SETS

This table lists national substitute characters stored in PROM on the printer control board. The position numbers refer to the shaded cells in the table showing the basic character sets. See page 35.

The applicable character set is selected with the ESC+R+n command.

Pos. No.	1	2	3	4	5	6	7	8	9	10	11	12
Hex.	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
Dec.	35	36	64	91	92	93	94	96	123	124	125	126
Character set												
USA	#	\$	@	[	\	\]	^	`	{	|	}	~
France	#	\$	à	°	ç	§	^	`	é	ù	è	¨
Germany	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
Great Britain	£	\$	@	[	\	\]	^	`	{	|	}	~
Denmark	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~
Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy	#	\$	@	°	\	é	^	ù	à	ò	è	ì
Spain	₧	\$	@	ı	Ñ	ı	^	`	"	ñ	}	~

FIRMWARE HISTORY

Functions and features are being added from time to time affecting the firmware in the TTP 101. The following table lists the changes of general interest.

Notice that the list may not contain the latest firmware versions. Please visit our web site <http://www.swecoin.se> for current information. You can also download the latest firmware version from the Swecoin web site.

FW version	Change
1.13	First version released to customer.
1.14	Small modification of burn-time.
1.15	Bar code type 128 added..
1.16	With earlier FW versions, it could happen that the print height became reduced when the printer got extremely hot. This was caused by a problem in the stepper motor drive IC. The problem was solved with a minor modification of the firmware.
1.17	<p>At power-ON, the firmware senses whether there is a solder jumper in position SW4 (standard) and, if so, presets the burn time parameter value to ESC q= 10. The jumper should always be installed when the printhead is supplied with +20 V. This is the case in all TTP 101 printers from serial number 8506 since they have a built-in +20 V regulator.</p> <p>With earlier printer versions, the solder jumper SW4 should be installed only if the printer control board is supplied with +20 V. If the supply voltage is between +20 V and +24 V, the solder jumper SW4 must be removed to prevent printhead damage. The burn time value will then be preset to the value ESC q = 5 at power-ON but can be adjusted by issuing the ESC q command during printing. Also see page 11.</p>
1.18	Presenter motor speed increased to ensure proper paper edge pickup at graphics printout.
1.19	<p>Danish characters included.</p> <p>Paper-low detection by using ESC ENQ 05H now supported for parallel interface.</p>
1.20	<p>An error in the ESC + ENQ + 01H function, causing only ACK messages to be reported, has been fixed.</p> <p>Command ESC + ENQ + 02H added. Syntax: (1BH)+(05H)+(02H), (27)+(5)+(2) decimal</p> <p>This command requests a paper-near-end sensor (paper low) status from the printer in a 1-byte format as follows:</p> <p>Value = (00H) indicates "No paper"</p> <p>Value = (01H) indicates "Paper present" at the sensor position</p> <p>Self test printout now indicates when jumper SW4 is installed.</p>

The TTP 101 printer is designed to be installed in some kind of enclosure such as a self service kiosk.

Preventing ESD and earth currents from affecting the printer operation requires proper connection of the printer chassis to protective earth through a mounting platform or through a separate earth conductor.

Trouble free printer operation also requires that the printer is shielded from excessive ambient light. Such light might disturb the printer operation by cheating a couple of built-in opto sensors.

Additional space is required for paper replenishment and paper jam removal. Consider mounting the printer on a movable platform so that the printer can be maintained outside the printer enclosure.

User Registration Form

32-1201-00, Ed B

After you have returned this registration form to us we will keep you informed of product changes, manual updates, etc. through our bulletin service. Do not return this form if you already have registered a previous edition of this manual.

You may also use this form to inform us about changed registration data (name, address, phone No., etc.), but please tick the *Changed information* box in that case.

New registration Changed information

Name

Organization

Postal address /street, box, area, etc.)

Zip / Postal code

City

State

Country

Telephone

Fax

E-mail

Please return by mail to

Swecoin Promakon AB
Box 132
S-191 22 SOLLENTUNA
Sweden

or by fax to

Int.: +46 8 96 50 54
Nat.: 08 96 50 54

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