valentin DRUCKSYSTEME

SPE

Service Instructions

Quality . Tradition . Innovation

Due to the constant further development of our devices discrepancies between manual and device can occur.
Please check www.carl-valentin.de for the latest update.

Trademarks

All named brands or trademarks are registered brands or registered trademarks of their respective owners and may not be separately labelled. It must not be concluded from the missing labelling that it is not a registered brand or a registered trademark.

Carl Valentin print modules comply with the following safety guidelines:

CE EG Low-Voltage Directive (73/32/EEC)
EG Electromagnetic Compatibility Directive (89/336/EEC)

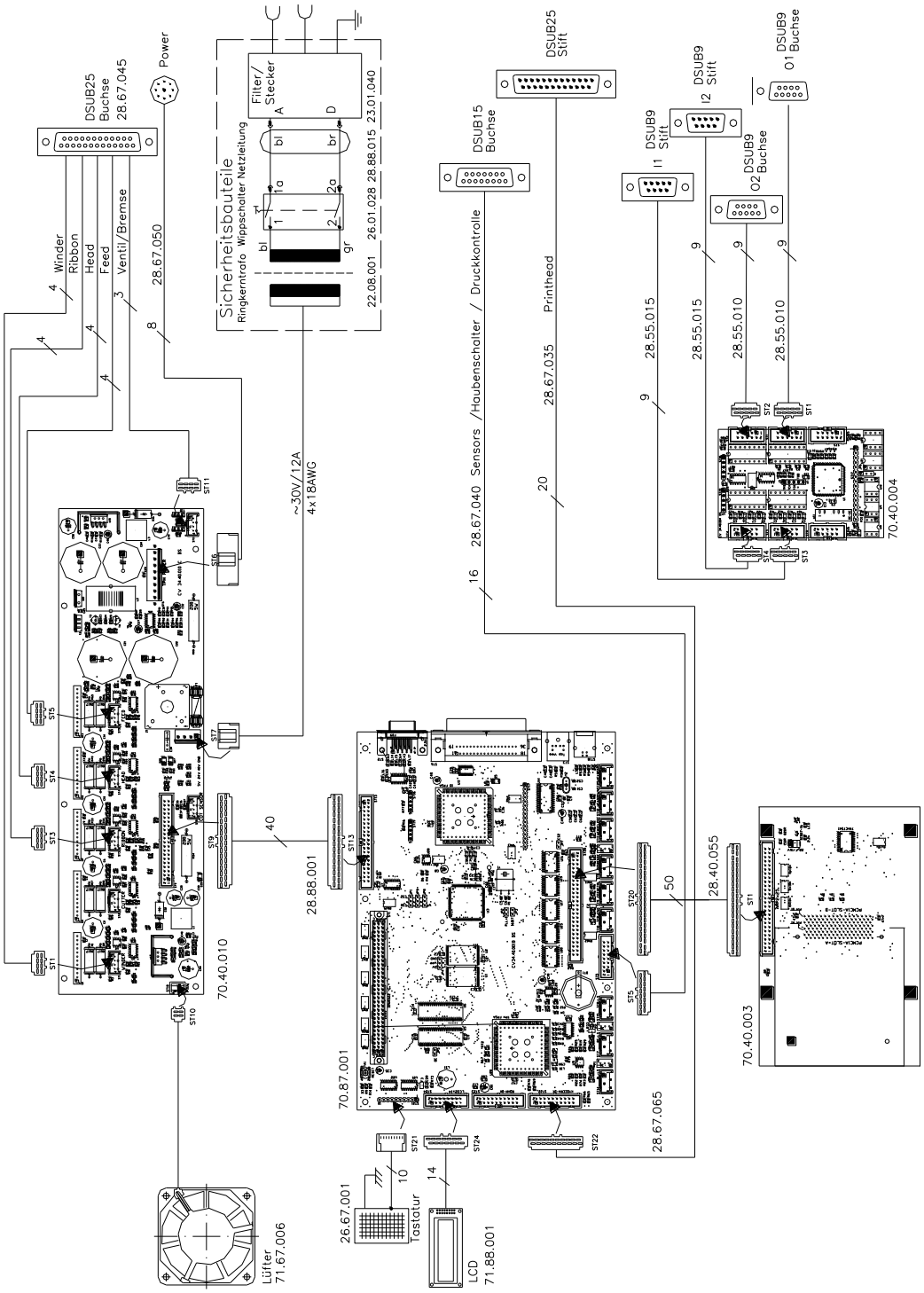
Carl Valentin GmbH
Postfach 3744
78026 Villingen-Schwenningen
Neckarstraße 78 – 86 u. 94
78056 Villingen-Schwenningen

Telefon +49 7720 9712-0
Telefax +49 7720 9712-9901

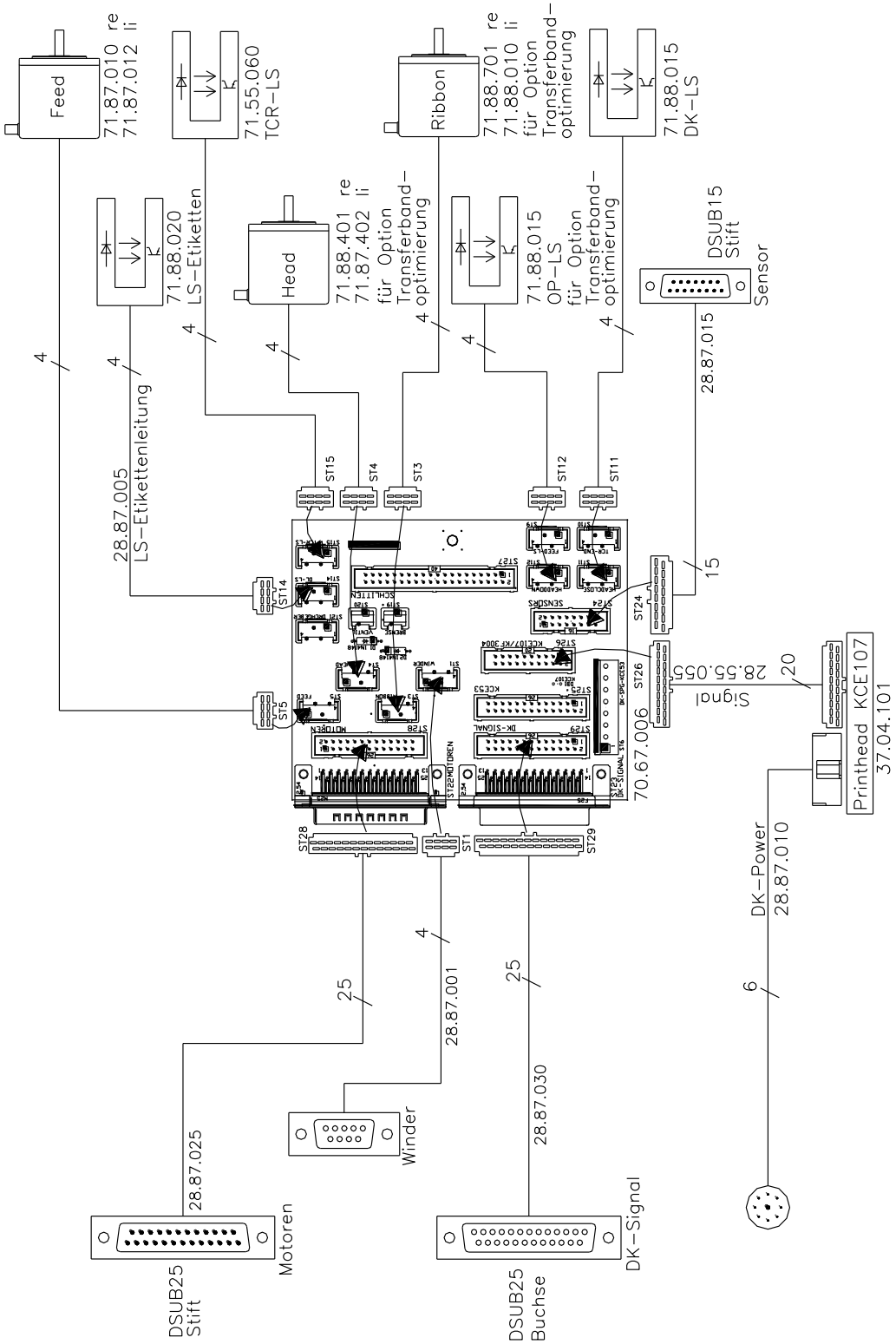
E-Mail info@carl-valentin.de
Internet www.carl-valentin.de

WIRING PLANS

Electronics

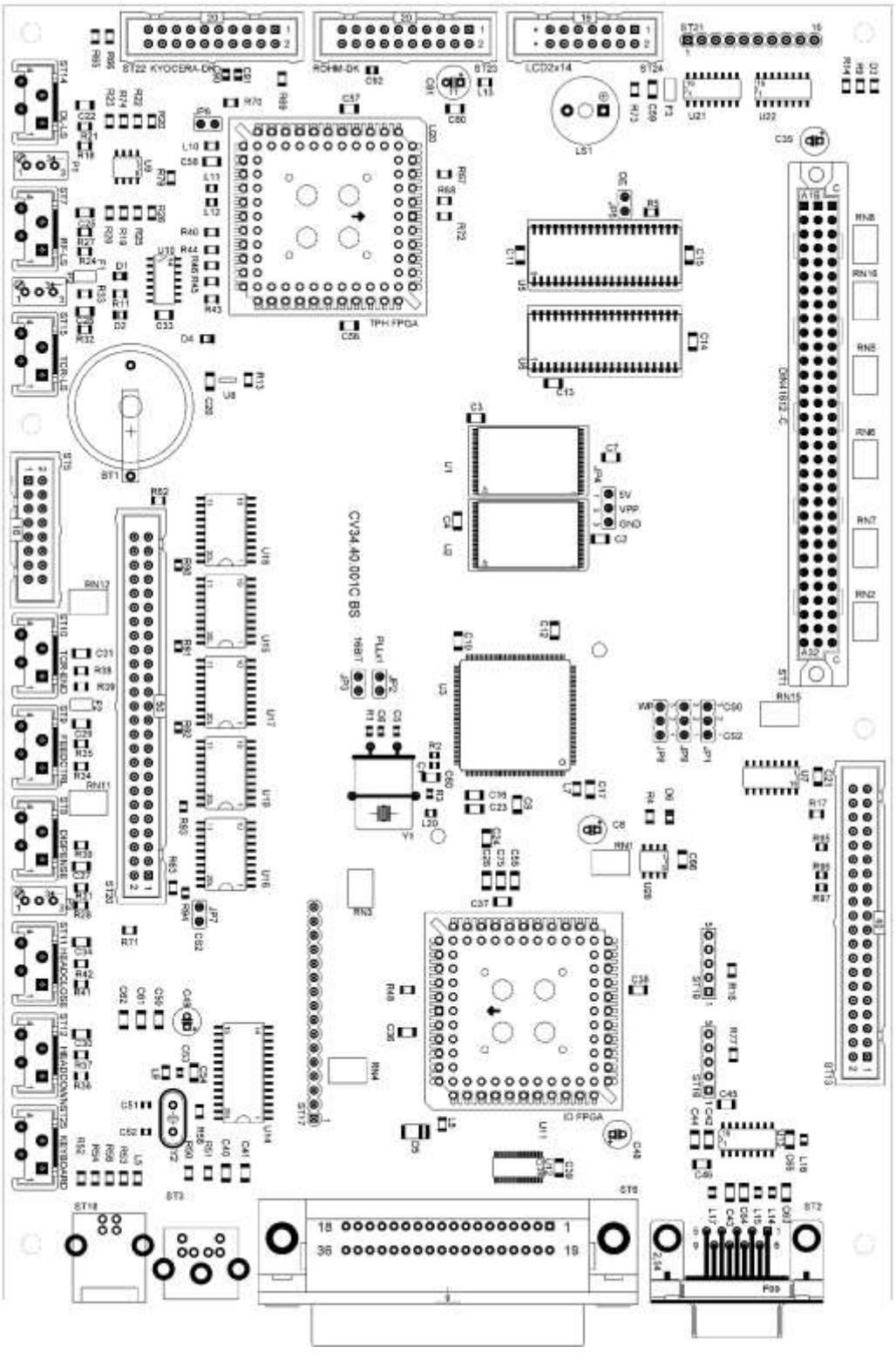


Mechanics


Feed
71.87.010 re
71.87.012 li
71.55.060
TCR-LS
Ribbon
71.88.701 re
71.88.010 li
für Option
Transferband-
optimierung
71.88.015
DK-LS
71.88.020
LS-Etiketten
Head
71.88.401 re
71.87.402 li
für Option
Transferband-
optimierung
71.88.015
OP-LS
für Option
Transferband-
optimierung
DSUB15
Stift
Sensor
28.87.005
LS-Etikettenleitung
28.87.015
70.67.006
28.55.055
Signal
Printhead KCE107
37.04.101
DK-Power
28.87.010
28.87.001
28.87.030
28.87.025
Winder
Motoren
DK-Signal
DSUB25
Stift
DSUB25
Buchse
ST1
ST2
ST3
ST4
ST5
ST11
ST12
ST14
ST15
ST23
ST24
ST25
ST26
ST28
ST29

CPU (70.40.010)

Plan of Components



Jumper Plan

	JP1	JP2	JP3	JP4
BOOT	1-2	open	closed	1-2
STANDARD	2-3	open	open	1-2

	JP5	JP7	JP8	JP9
BOOT	closed	open	2-3	2-3
STANDARD	closed	closed	2-3	2-3

Components and Plug-in Positions

Components:

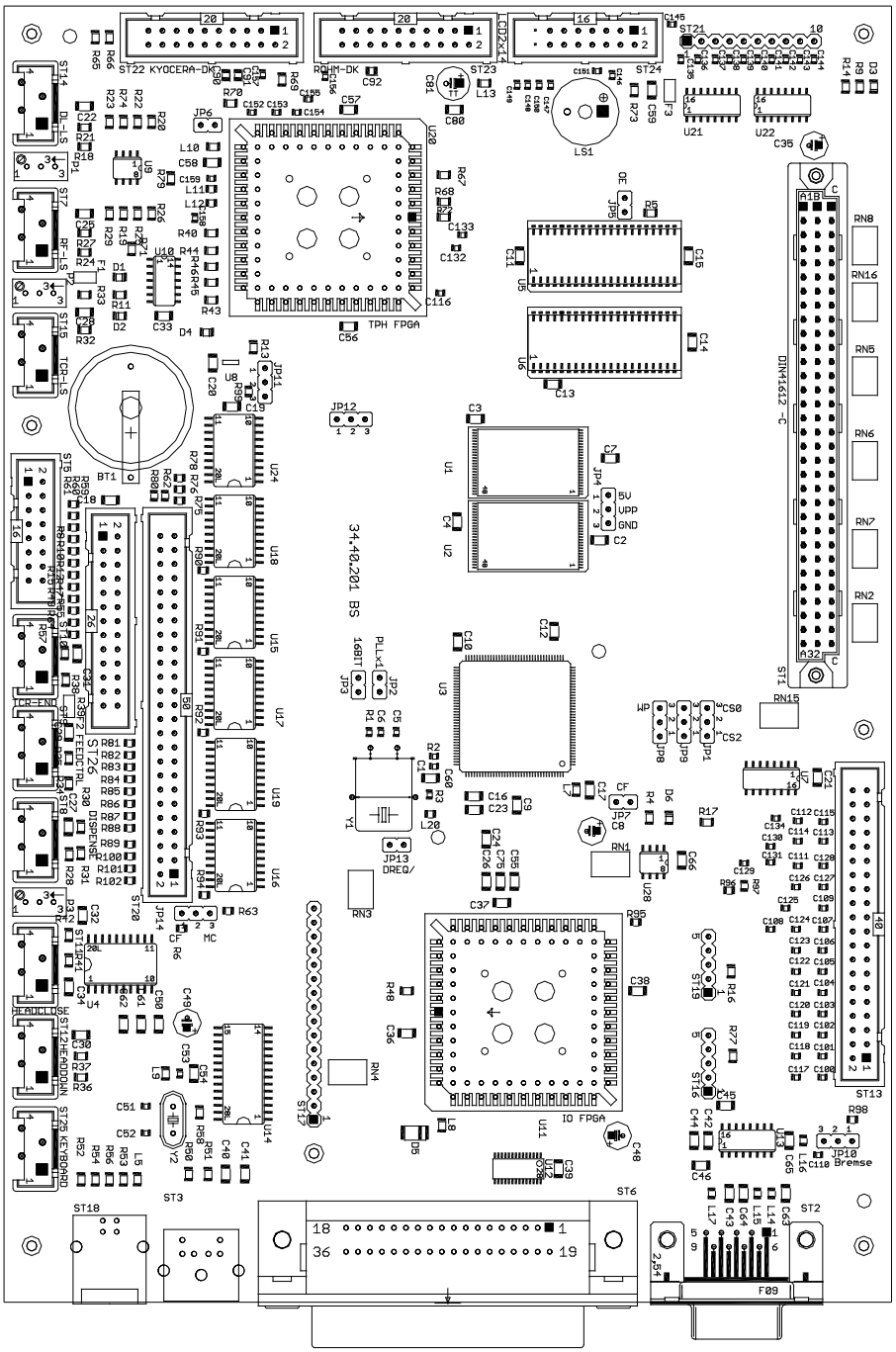
P1	Sensibility label photocell transmission
P2	Sensibility label photocell reflexion
P3	Sensibility dispenser photocell
U1; U2	FLASH component
U3	32bit RISC processor
U5; U6	DRAM
U8	RESET component
U10	RTC
U11	INPUT/OUTPUT FPGA
U13	RS-232 component
U14	USB component
U20	Printhead FPGA
U28	serial EEPROM

Plug-in positions

ST1	Bus plug
ST5	Connected sensor signals
ST13	Connection to power unit
ST15	Ribbon control
ST16, 17, 19	Dispenser I/O, RS-485, RS-422 (option)
ST20	Memory Card
ST21	Foil keyboard
ST22	Printhead KCE107/12 or KCE 162/12
ST24	LCD display

CPU (70.40.201)

Plan of Components



Jumper Plan

	JP1	JP2	JP3	JP4	JP5	JP6	JP7
BOOT	1-2	open	closed	1-2	closed	open	open
STANDARD	2-3	open	open	1-2	closed	open	closed *
2 Ladekanäle	2-3	open	open	1-2	closed	closed	closed *

	JP8	JP9	JP10	JP11	JP12	JP13	JP14
BOOT	1-2	1-2	-	1-2	1-2	open	open
STANDARD	2-3	2-3	2-3	1-2	1-2	open	1-2*
2 Ladekanäle	2-3	2-3	1-2	2-3	2-3	closed	1-2*

***** If PCMCIA interface is used, JP7 open and JP14 2-3

Components and Plug-in Positions

Components:

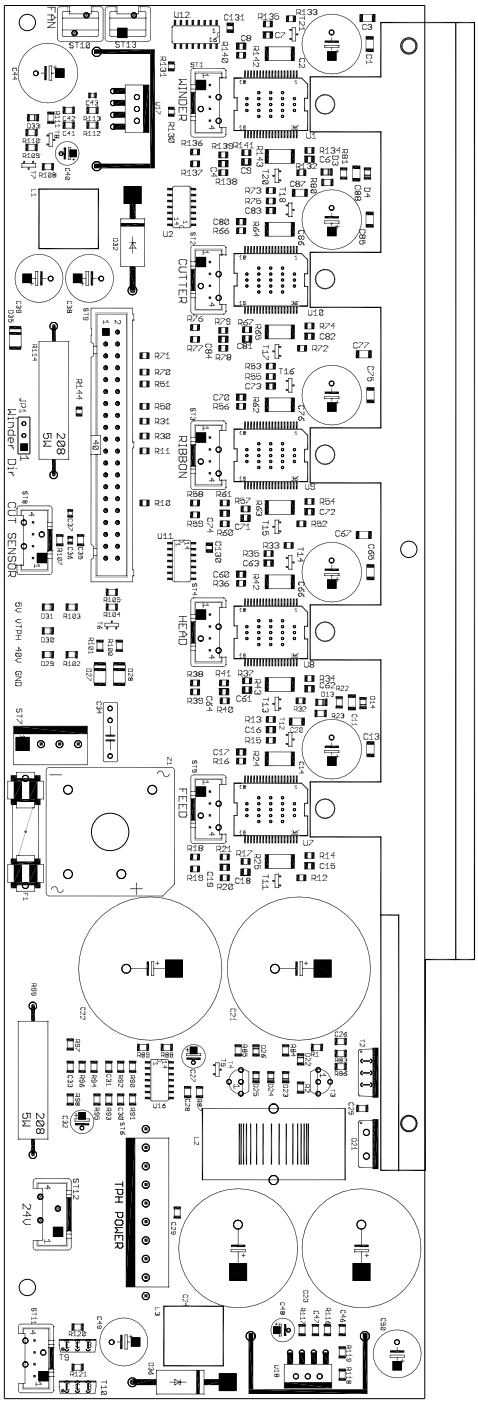
U1; U2	FLASH component
U3	32 Bit RISC CPU
U5; U6	DRAM
U8	RESET
U10	RTC (Real Time Clock)
U11	Input/Output FPGA
U13	RS-232
U14	USB (Universal Serial Bus)
U20	Printhead FPGA

Plug-in positions

ST1	Bus male connector
ST5	Combined sensor signals
ST9	Zero point photocell
ST10	Limit point photocell
ST11	Cover switch
ST12	Compressed air control
ST13	Connection to power unit
ST15	Transfer ribbon control
ST16, 17, 19	Dispenser I/O, RS-485, RS-422 (option)
ST20	PCMCIA Card
ST21	Foil keyboard
ST22	Printhead KCE107/12 and KCE 53/12
ST24	LCD display
ST26	Compact Flash Card

POWER UNIT (REVISION H)

Plan of Components



Components and Plug-in Positions

Components:

U7	motor driver transfer ribbon motor
U13	motor driver feed motor
U16	control component printhead heater voltage
U17	voltage control 5V
U18	voltage control 24V
Z1	Bridge-connected rectifier
F1	secondary fuse 10A/T
T2	P canal MOS-FET 100V/50A printhead voltage

Plug-in positions

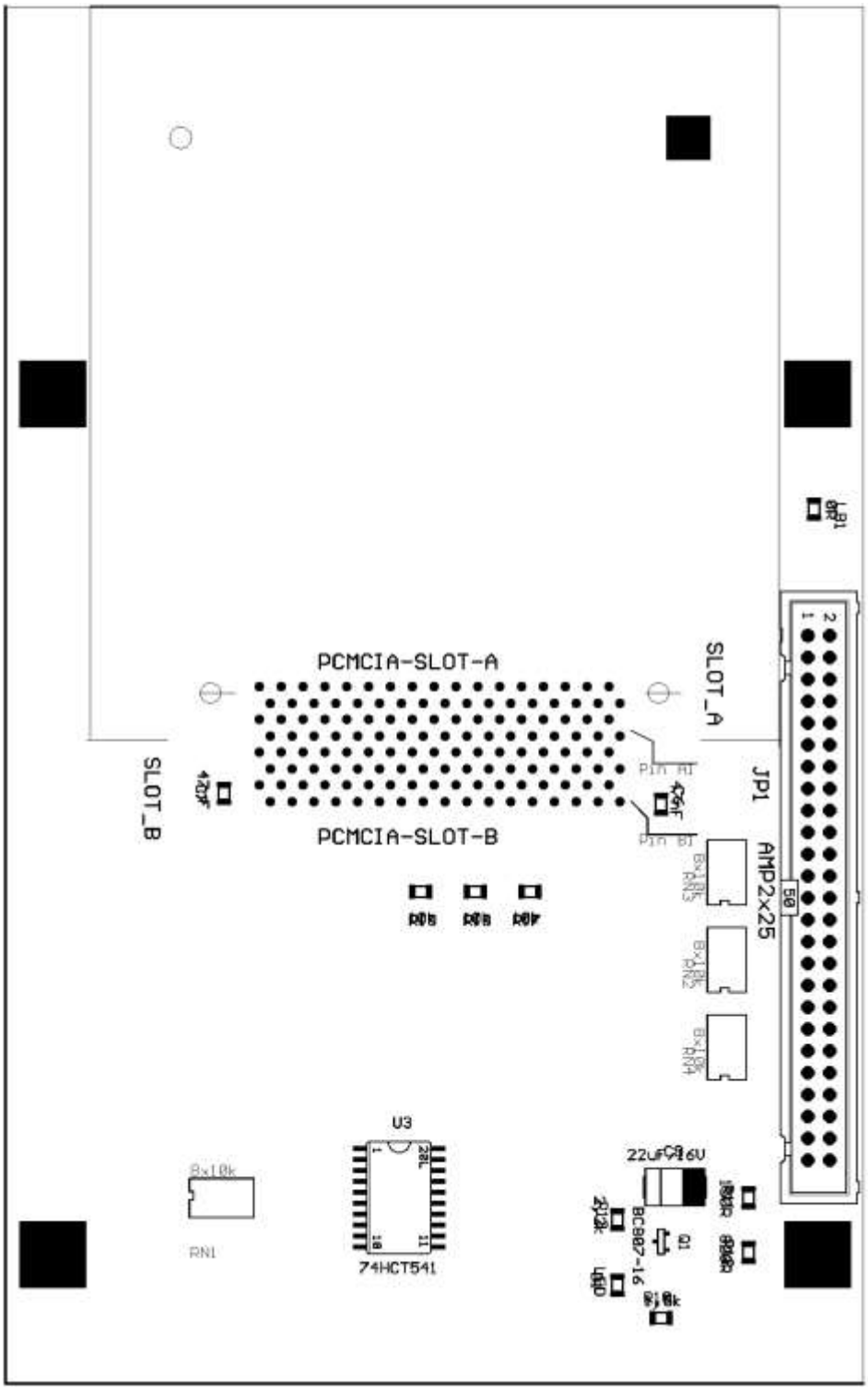
ST1	motor plug 'winder'
ST3	motor plug transfer ribbon motor
ST4	motor plug ribbon savings motor
ST5	motor plug feed motor
ST6	heater voltage printhead
ST7	toroidal transformer
ST8	cutter photocell (option)
ST9	connection to CPU
ST10	fan

Measuring values

5V	voltage for CPU VCC
24V	heater voltage printhead VDK
40V	input voltage VIN
GND	mass

MEMORY CARD SLOT

Plan of Components



Components and Plug-in Positions

Components:

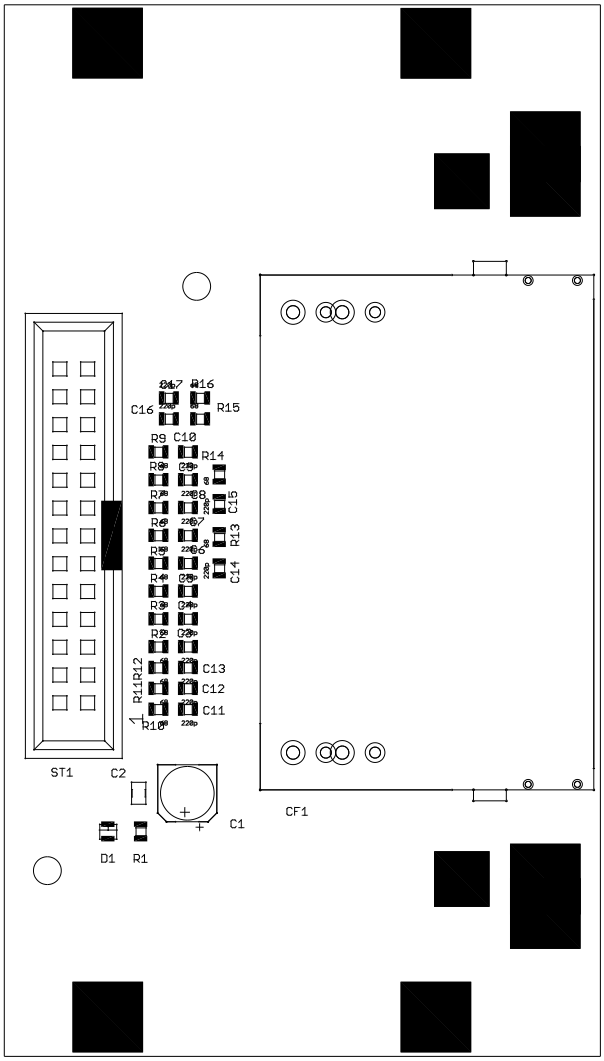
U3	data bus driver
Q1	switching transistor for memory card voltage

Plug-in positions:

JP1	connection to CPU

COMPACT FLASH CARD SLOT

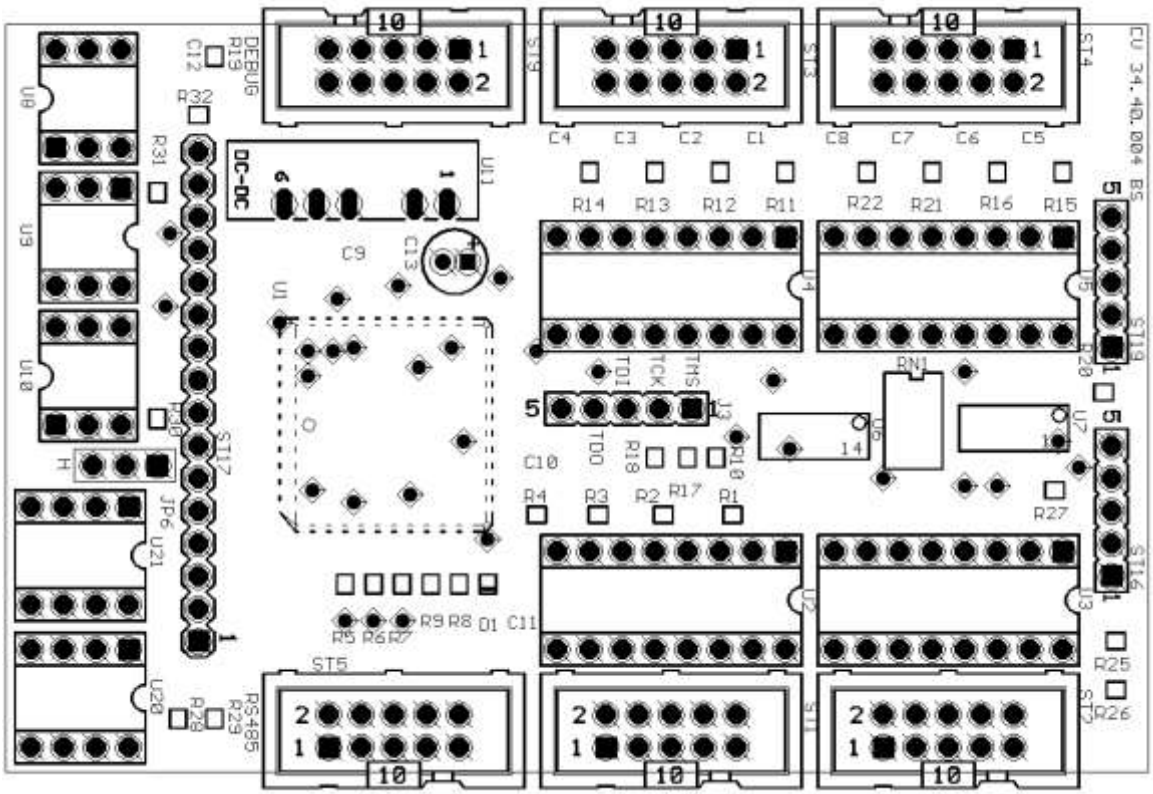
Plan of Components



If PCMCIA interface is used, JP7 open and JP14 2-3

INPUT/OUTPUT PLATE

Plan of Components



Jumper Plan

Only valid for complete equipped I/O plate

Function	Jumper position JP6
RS-422 full duplex	2-1
RS-485 half duplex	2-3

Components and Plug-in Positions

Components:

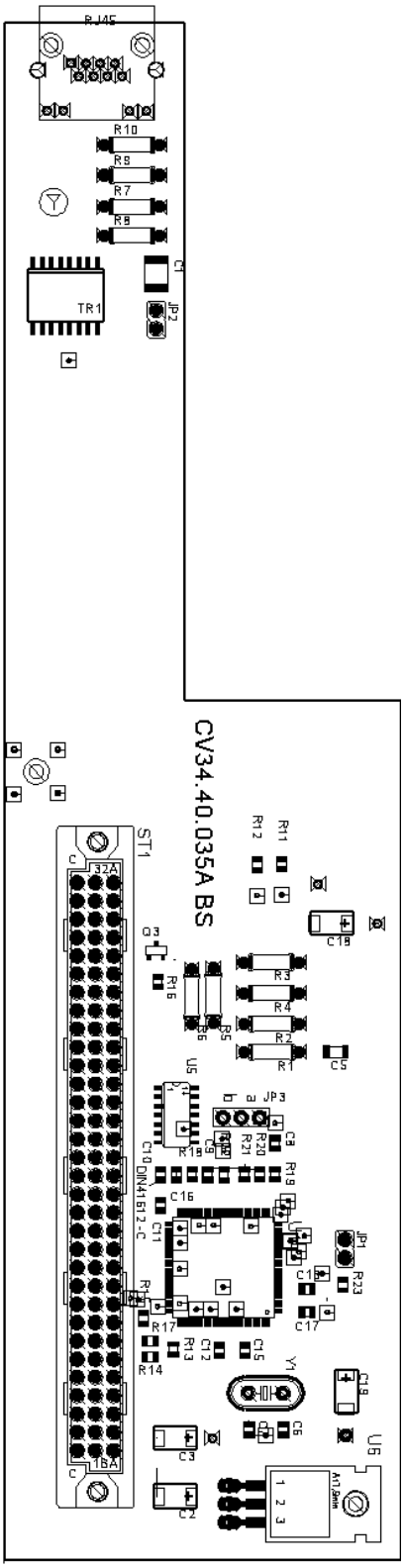
U1	EPLD component
U2	Optocoupler outputs 1-4 (Output1)
U3	Optocoupler outputs 5-8 (Output2)
U4	Optocoupler inputs 1-4 (Input1)
U5	Optocoupler inputs 5-8 (Input2)
U6	driver inputs
U7	Driver RS-422 / RS-485
U8	Optocoupler DTR/DIR
U9	Optocoupler TXD1
U10	Optocoupler RXD1
U11	Voltage transformer 5V ⟶ ±5V
U20, 21	Interface component RS-422 / RS-485

Plug-in position:

ST1	Outputs 1-4 (Output1)
ST2	Outputs 5-8 (Output2)
ST3	Inputs 1-4 (Input 1)
ST4	Inputs 5-8 (Input2)
ST5	RS-485 / RS-422
ST 16, 17, 19	Connection to CPU

ETHERNET (Option)

Plan of Components



Components and Plug-in Positions

Components:

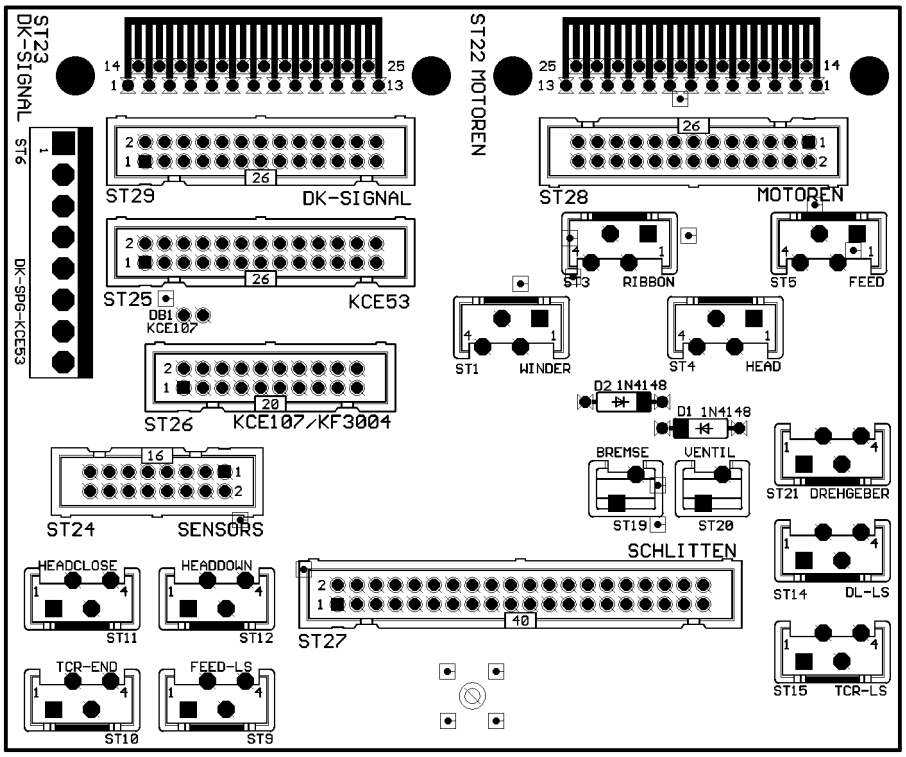
U1	ethernet processor
U5	reset inverter
U6	voltage control 3.3V
TR1	transformer

Plug-in positions:

ST1	connection bus plug CPU

DISTRIBUTOR PLATE

Plan of Components



Plug-in Positions

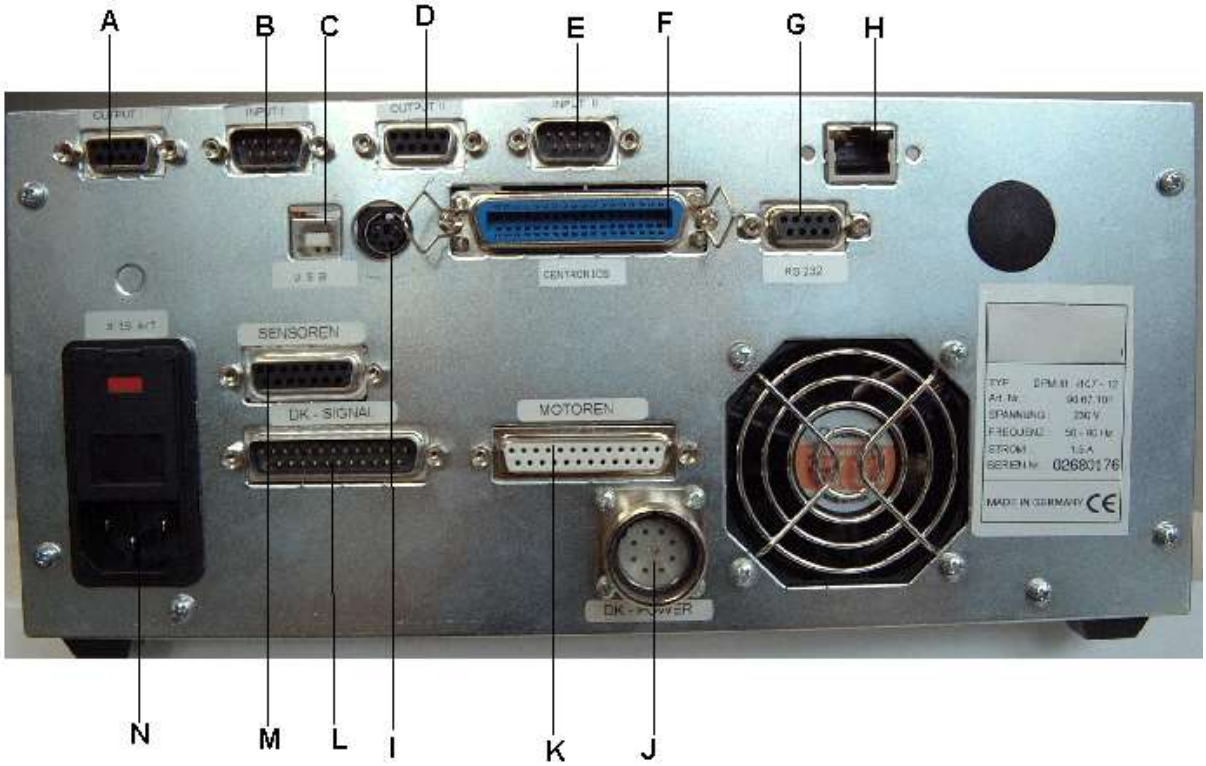
ST3	Transfer ribbon motor
ST5	Feed motor
ST15	Transfer ribbon control
ST22	Motor signals of electronic
ST23	Printhead signals of electronic
ST24	Sensor signals of electronics
ST26	KCE 107/12
ST28	Motor signals
ST29	Printhead signals

VIEWS

Front View

▲	Printhead is moved up.
▼	Printhead is moved down.
►	If available, you switch to the next edit field. With the arrow keys ▲ and ▼ you can change the values.
◄	If available, you switch to the next edit field. With the arrow keys ▲ and ▼ you can change the values.
↵	If you are in the Function Menu, you can switch to the next menu item.
F	Switch to the Function Menu. If you are already in the Function Menu, you can switch one menu item back.
F1 - F2	No function
💾	Press this key to use the memory card function
🗐	Switch to the Quantity Menu. With the arrow keys ▲ and ▼ you can select the number of labels you want to print.
●	Settings in the Function Menu are confirmed. A current print order can be interrupted and then continued. In case the interrupted print order is not to continue, press the III key to delete it. In this case no further label of the print order is printed.
III	In case you are not in the Main Menu you can return to it. If you are in the Main Menu, a test print is released.

Rear



A = Output 1
B = Input 1
C = USB
D = Output 2
E = Input 2
F = Centronics
G = RS-232
H = Ethernet (option)
I = Connection to PC keyboard
J = Connection to heater voltage
K = Connection to motor signals
L = Connection to printhead data
M = Connection to sensor signals
N = Power connection (fuse 2x T3.15 A 250 V AC / 2x T5A 250 V AC)

MEASURING POINTS POWER UNIT

Voltage Supply

Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to proceed measuring.

The main measuring points are between ST3 (cut sensor) and SST7 (transformer input)

Measuring point	Description	Correct value	Notes
5V	VCC	5V	
24V	VDK		The printhead voltage depends on 3 factors (see below)
40V	VIN	40V	
GND	GND	0V	

1. factor = Contrast (the higher the contrast, the higher the printhead voltage)
2. factor = Printhead resistance (the higher the resistance, the higher the printhead voltage)
3. factor = Printhead temperature (the higher the temperature, the lower the printhead voltage)

Printhead Voltage*

The printhead voltage depends on the following 3 factors:

1. factor = Contrast (the higher the contrast, the higher the printhead voltage)
2. factor = Printhead resistance (the higher the resistance, the higher the printhead voltage)
3. factor = Printhead temperature (the higher the temperature, the lower the printhead voltage)

The measured voltages are approximate values and therefore fluctuations from machine to machine can be possible:

Contrast	Measured printhead voltage printhead voltage: 1265 printhead temperature: 22°C	Measured printhead voltage printhead voltage: 1330 printhead temperature: 22°C
10 %	≈ 22,78V	≈ 23,26V
100 %	≈ 23,69V	≈ 24,17V
200 %	≈ 24,66V	≈ 25,15V

Tranformer Voltage*

Measuring point	**Description**	**Correct value**	**Notes**
ST7 PIN1 und 4; PIN2 und 3	28V1 /28V2	~ 30V	voltage alternating current VAC

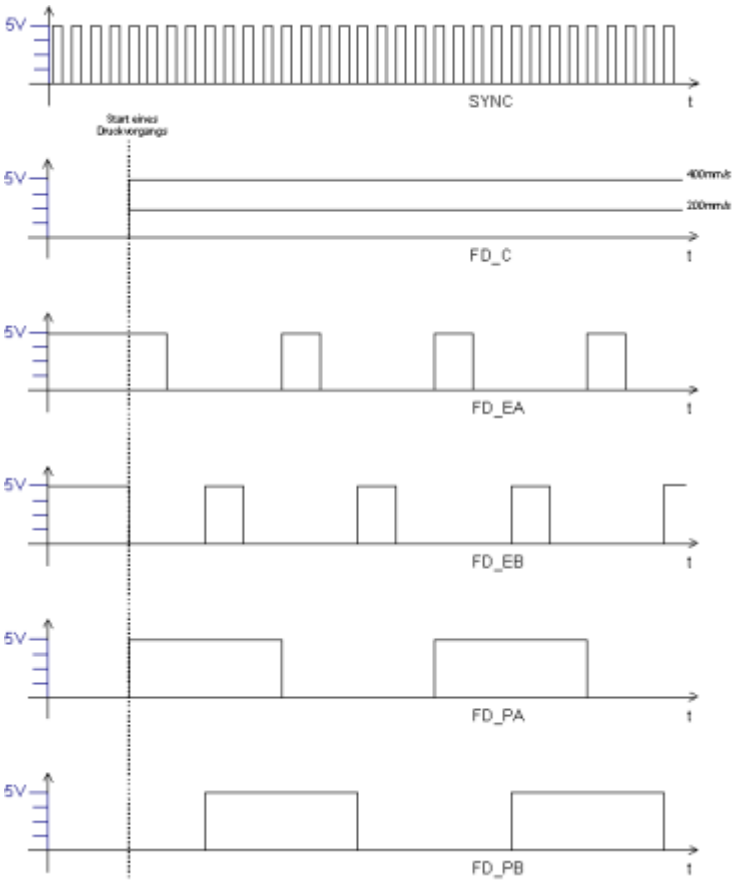
*** Attention:** Unplug the machine!
Only experienced staff is allowed to open the machine and to proceed measuring.

Feed Motor

Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to proceed measuring.

Measuring point	Description	Correct value	Notes
ST9 PIN28; D18 anode	FD_EA		release motor driver phase A
ST9 PIN31; D19 anode	FD_EB		release motor driver phase B
ST9 PIN32; R106	FD_C		control input motor current
ST9 PIN19; D17 anode	FD_PA		input signal motor driver phase A
ST9 PIN33 D20 anode	FD_PB		input signal motor driver phase B
ST9 PIN30 U15 PIN1 or PIN13	SYNC	≈ 28kHz	synchronization motor driver

Schematic drawing of feed signals



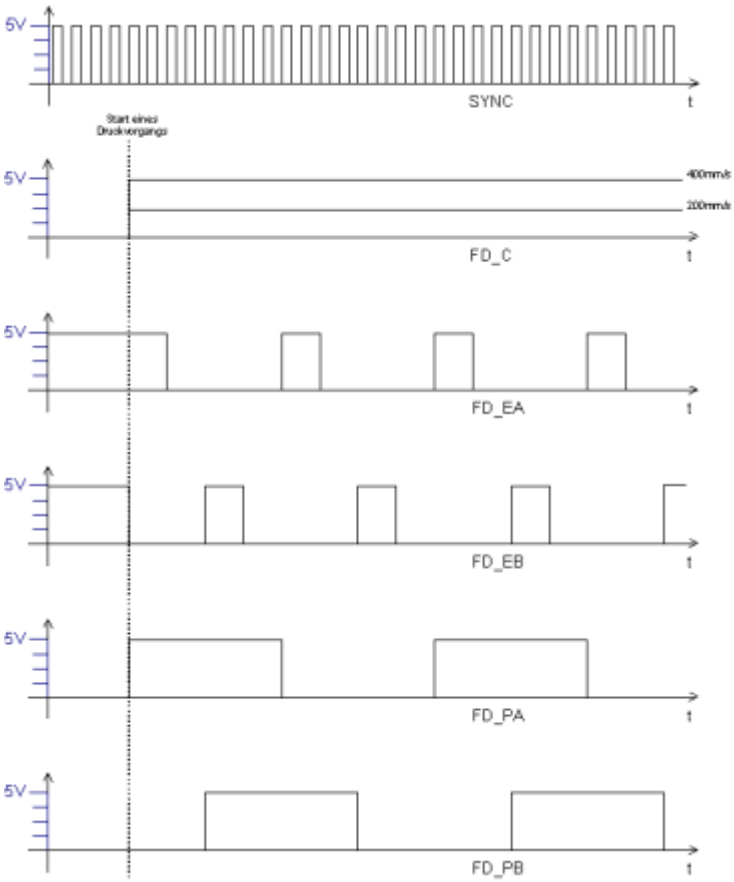
Ribbon Motor

Attention: Unplug the machine!

Only experienced staff is allowed to open the machine and to proceed measuring.

Measuring point	Description	Correct value	Notes
ST9 PIN11; D10 anode	RFD_EA		release motor driver phase A
ST9 PIN14; D11 anode	RFD_EB		release motor driver phase B
ST9 PIN12; R48	RFD_C		control input motor current
ST9 PIN9; D09 anode	RFD_PA		input signal motor driver phase A
ST9 PIN13; D12 anode	RFD_PB		input signal motor driver phase B
ST9 PIN30 U9 PIN1 or PIN13	SYNC	≈ 28kHz	synchronization motor driver

Schematic drawing of ribbon motor



MEASURING POINTS CPU

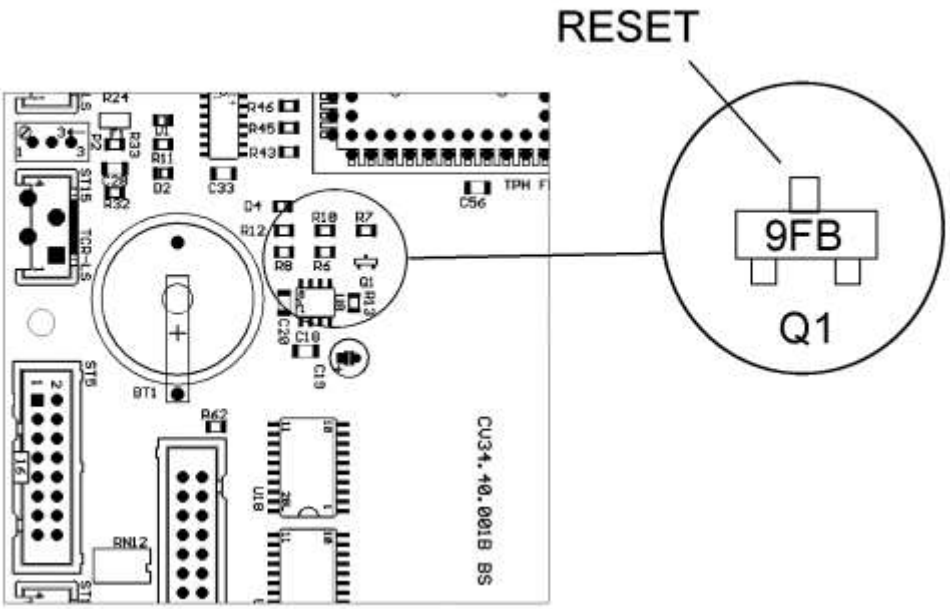
Voltage Supply

Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to proceed measuring.

Measuring point	Description	Correct value	Notes
ST13 PIN 1/2 LED D3 anode	VCC	5V	
ST13 PIN 39/40	GND	0V	

Clock Signal: RESET

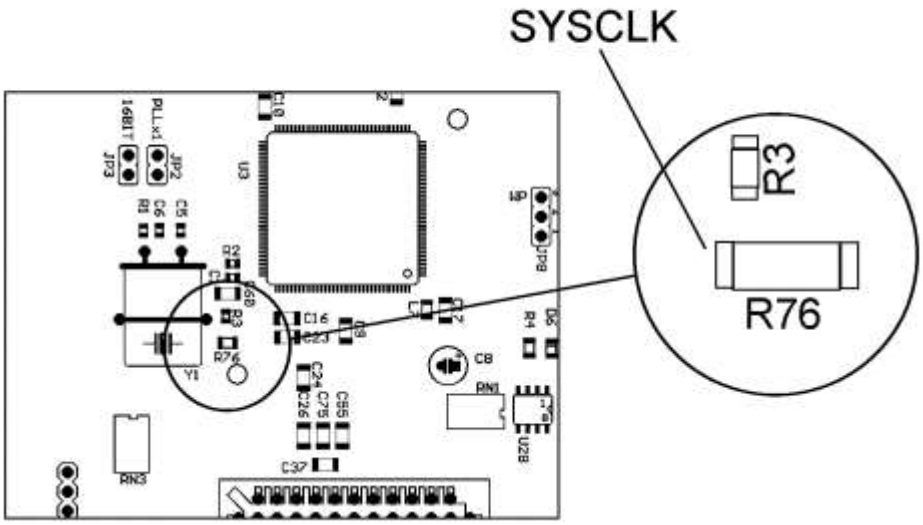
Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to proceed measuring.



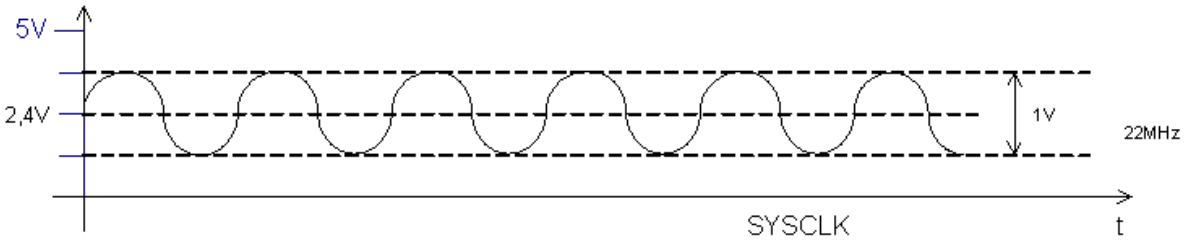
Correct value = 5V

Clock Signal: Systemclock

Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to proceed measuring.



Schematic drawing of system clock

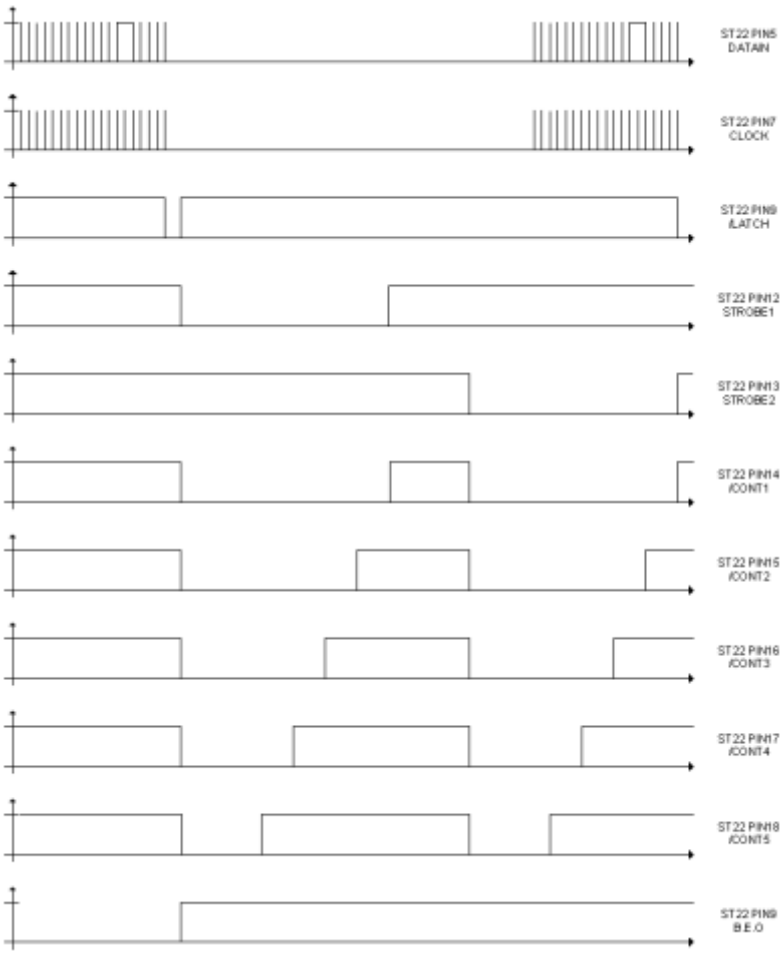


Printhead Signals

Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to proceed measuring.

Measuring point	Description	Correct value	Notes
ST22 PIN5	DATAIN		
ST22 PIN7	CLOCK		
ST22 PIN9	/LATCH		
ST22 PIN11	B.E.O.		
ST22 PIN12-13	STR1-2		
ST22 PIN14-18	/CONT1-5		
ST22 PIN20	THERM	23°C ≈ 2,5V	the higher the voltage, the higher the temperature
ST22 PIN3, 4, 6, 8, 10, 19	GND		
ST22 PIN1, 2	5V		

Schematic drawing of printhead signals



MEASURING POINTS PHOTOCELLS

Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to proceed measuring.

The photocell signals (function in brackets) are central transmitted from the CPU by ST5 to the print mechanics. TCR (transfer ribbon control), HEADCLOSE (printhead locking) and HEADDOWN (printhead control).

Transfer Ribbon Control Photocell (TCR)

Measuring point electronics CPU	**Description**	**Correct value**	**Notes**
ST15 PIN1	VCC	5V	
ST15 PIN2	RIBBONCTRL	H or L	
ST15 PIN3	PULLUP	≈ 1,297V	
ST15 PIN4	GND	0V	

Measuring point mechanics distributor plate	**Description**	**Correct value**	**Notes**
ST15 PIN1	VCC	5V	
ST15 PIN2	RIBBONCTRL	H or L	
ST15 PIN3	PULLUP	≈ 1,297V	
ST15 PIN4	GND	0V	

The transfer ribbon photocell checks the movement of transfer ribbon by changing of high and low value at RIBBONCTRL. The ration of the changing should be 1 to 1.
Is the value for a certain period static (H or L, but depending on the set power of the control) appears an error message.

The transfer ribbon control value is indicated in the service function menu as 'TR'

Printhead Locking

Measuring point electronics CPU	Description	Correct value	Notes
ST11 PIN1	HEADCLOSE	H or L	
ST11 PIN2	GND	0V	

Measuring point mechanics distributor plate	Description	Correct value	Notes
ST11 PIN2	HEADCLOSE	H or L	
ST11 PIN4	GND	0V	

In case the printhead is closed, the photocell changes the HEADCLOSE signal to 0V. If the printhead is opened during printing the feed stops and the printhead voltage is immediately stopped.

The HEADCLOSE value is indicated in the service function menu as 'H'
(display '0' = printhead is closed).

Printhead Control

Measuring point electronics CPU	Description	Correct value	Notes
ST12 PIN1	HEADDOWN	H or L	
ST12 PIN2	GND	0V	

Measuring point mechanics distributor plate	Description	Correct value	Notes
ST12 PIN2	HEADDOWN	H or L	
ST12 PIN4	GND	0V	

REPLACING DEFECTIVE COMPONENTS

Fuse

Primary fuse

Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to replace defective components.

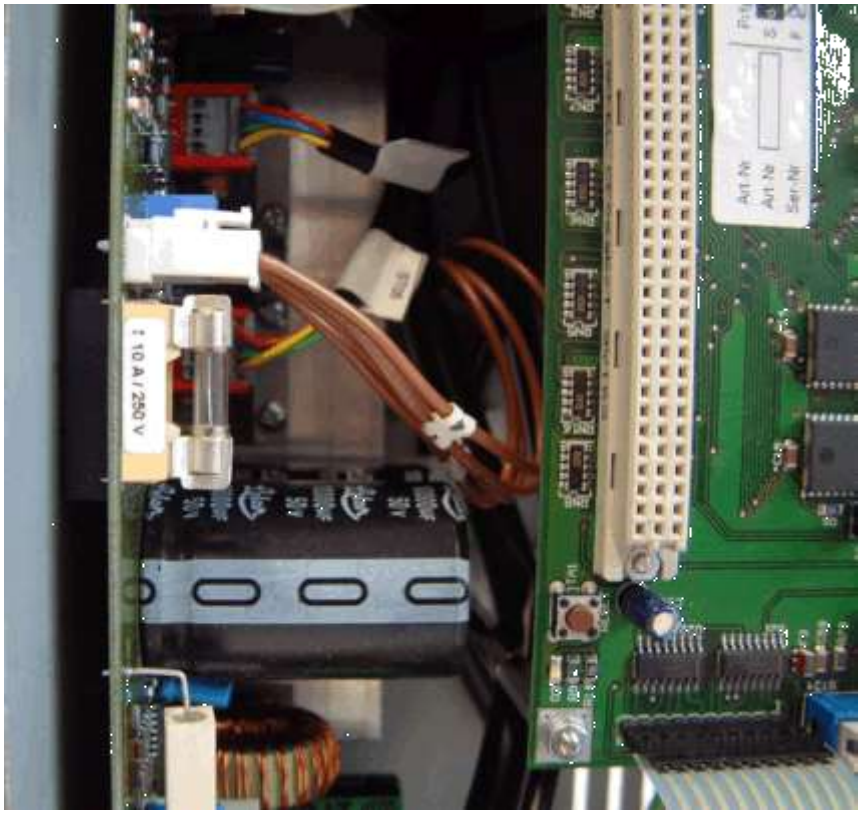
The primary fuse is into the line filter block (A).

Unplug the machine and then open its cover (B).

Remove the fuse-holder (C) which is behind to replace the fuse
(fuse value = 2x T3.15 A 250 V AC / 2x T5A 250 V AC).

Secondary fuse

Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to replace defective components.



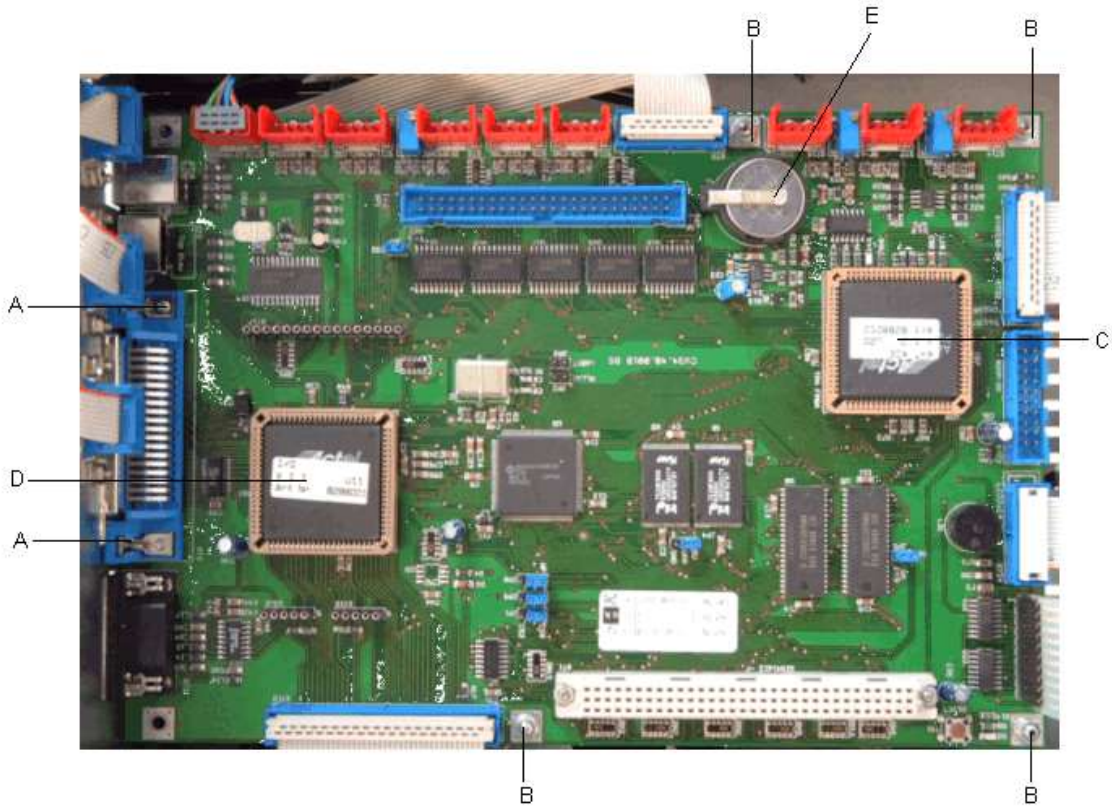
After removing the machine cover the CPU plate is visible.

The secondary fuse which you can find onto the power unit is at the side.

F1: fuse 10A/T protection of the complete power unit voltage

CPU

Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to replace defective components.



Remove the machine cover.

Disconnect the input/output plate at the power unit.

Disconnect all line from the CPU.

Unscrew the fixing screws (A) at the Centronics port.

Unscrew the fixing screws (B) at the CPU.

Remove the defectice CPU.

Install the new CPU in reverse order.

Install again the machine cover.

Printhead FPGA*

(see illustration (C) at the previous page)
Remove the defective FPGA from the PLCC support base with a suitable displacement pincer.

Pay attention to the poles and press the new FPGA into the support base.

Input/Output FPGA*

(see illustation (D) at the previous page)
Remove the input/output plate from the CPU and the I/O FPGA is visible.

Remove the FPGA from the PLCC support base with a suitable displacement pincer.

Batterie*

(see illustation (E) at the previous page)

DANGER!

Danger of explosion due to improper replacement of the battery!

⇒ Use non-conductive tools.

⇒ Pay attention to polarity.

Lift up the fixing bracket of battery.

Remove the battery.

Insert a new battery (CR 2032) into the bracket.

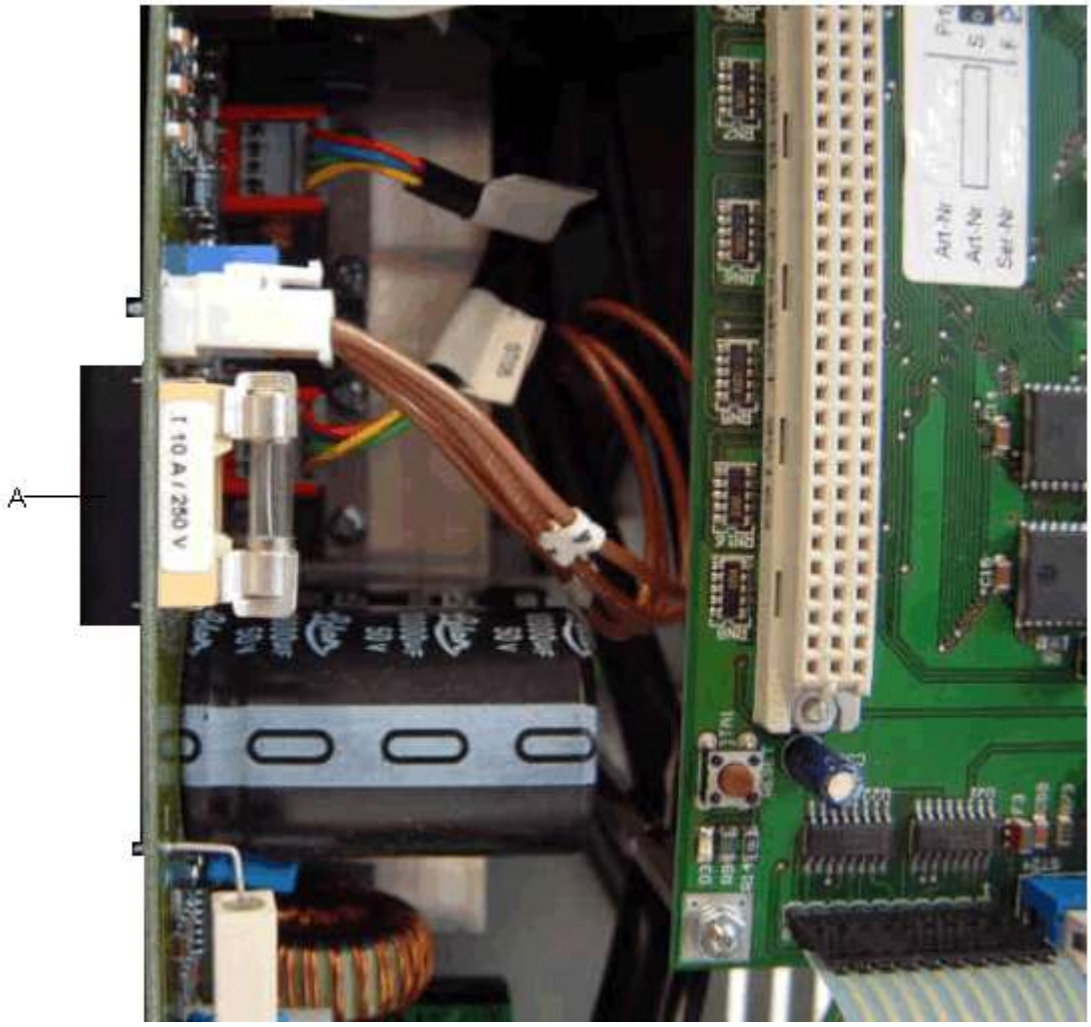
Pay attention to the poles.

The battery is necessary for the current supply of real time clock (RTCF). After changing the battery, enter the Device Settings menu and switch to the menu item Date/Time to set them new.

*** Attention:** Unplug the machine!
Only experienced staff is allowed to open the machine and to replace defective components.
Only experienced staff with appropriate tools is allowed to remove the FPGA!
Damages of PLCC support base must be avoided because the faultless function is no longer guaranteed.

Power Unit

Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to replace defective components.



Remove the machine cover.

Disconnect all lines.

Unscrew the fixing screws (A) at the rectifier Z1.

Unscrew the fixing screws at the base of electronics.

Remove the defective power unit.

Insert the new power unit into the electronics.
Please pay attention that no lines are clamped under the heat sink of power unit.

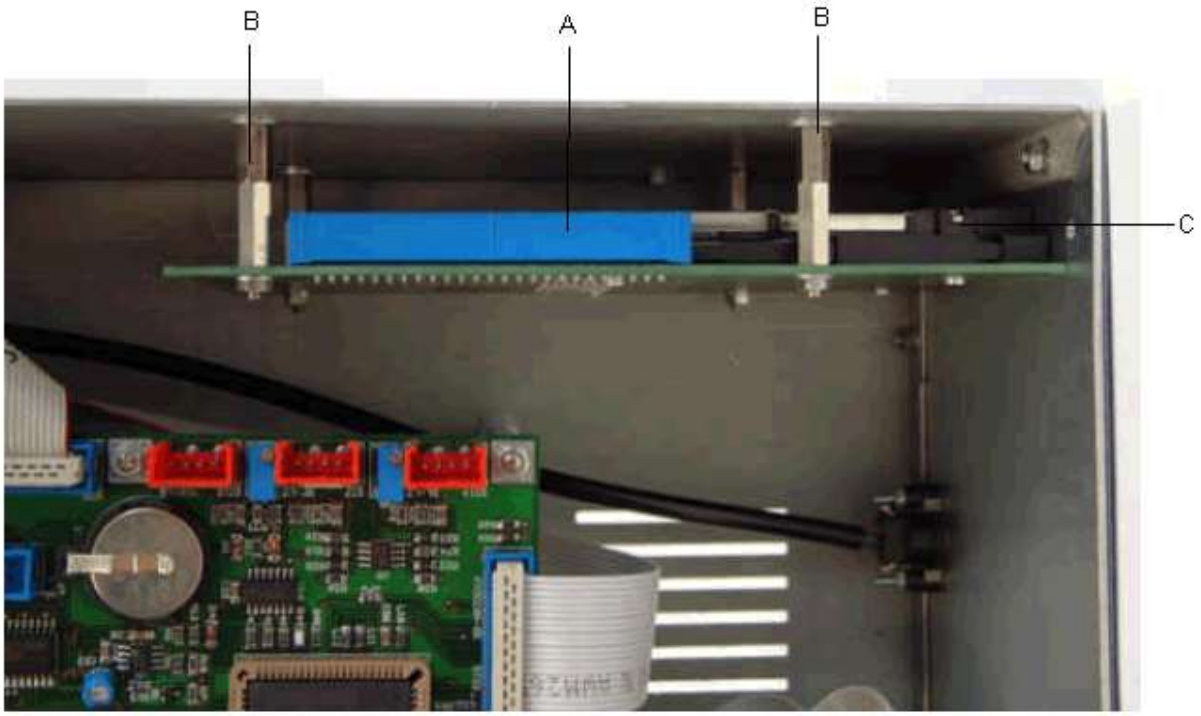
Connect again all lines to the appropriate plug-in positions.

Screw the new power unit.

Install again the machine cover.

Memory Card Slot

Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to equip the machine with options.



Remove the machine cover.

Disconnect the connecting cable (A) to CPU at break-through.

Unscrew the fixing screws (B) at the side panel.

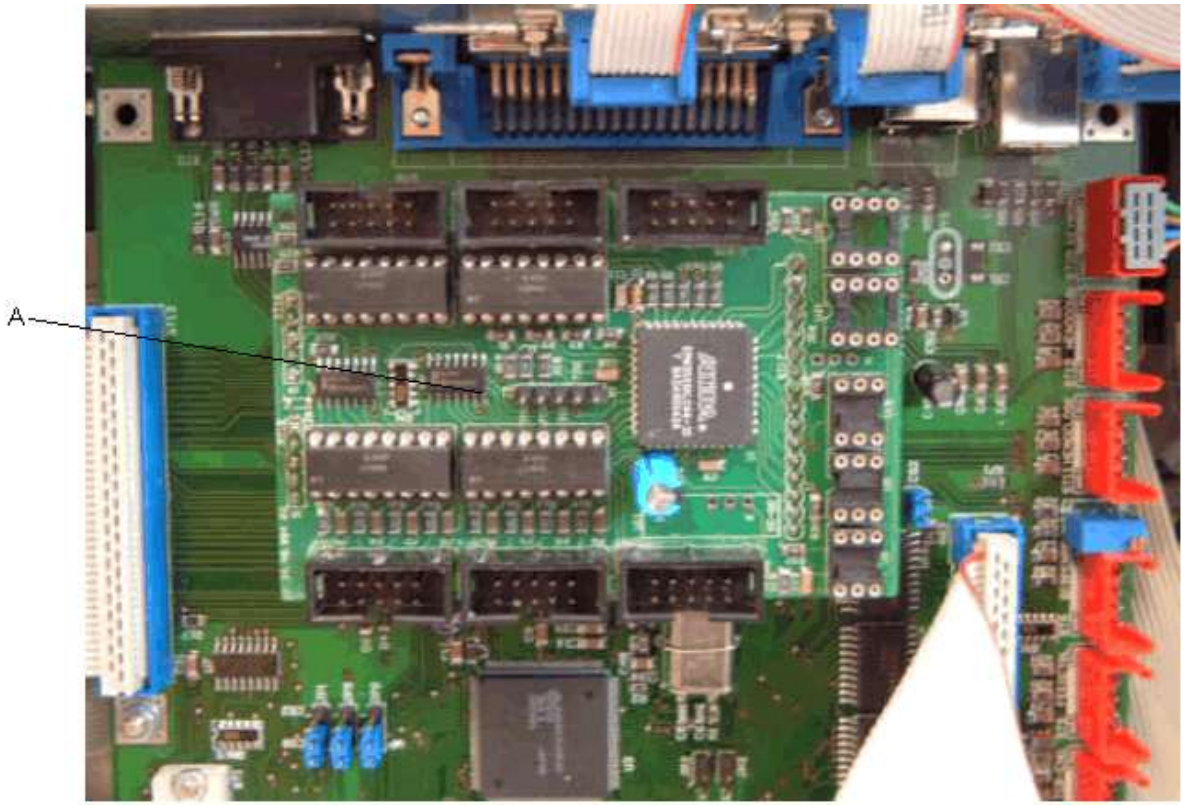
Remove the defective slot (C).

Install the new slot in reverse order.

Install again the machine cover.

Input/Output Plate

Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to equip the machine with options.



Remove the machine cover.

Disconnect the connecting cable of input/output plate to the rear of machine.

Remove the defective plate (A) carefully from CPU.

Install the new plate.

Connect the connecting cable according to the wiring plan.

Install again the machine cover.

Enter the service functions menu to test inputs and outputs.

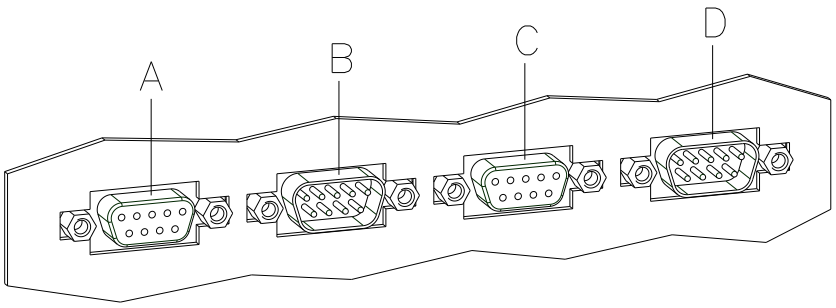
```
Input:  11111111
Output: 00000000
```

In case an input is activated then the corresponding position changes to 1. If you want activating an output you have to move the cursor to the corresponding position and to set the value by means of the ▲ and ▼ key to 1. Set the value to 0 to deactivate an output.

Inputs and Outputs

Control Inputs and Outputs (Version I)

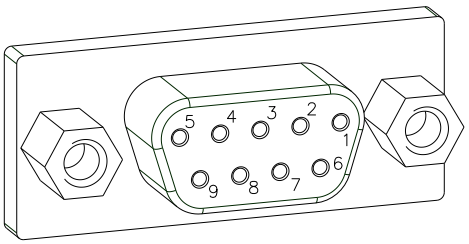
Plug connection - back side of control unit

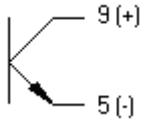
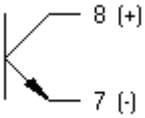
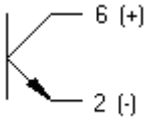
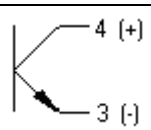


A = External output 1-4 (Output I)
B = External input 1-4 (Input I)
C = External output 5-8 (Output II)
D = External input 5-8 (Input II)

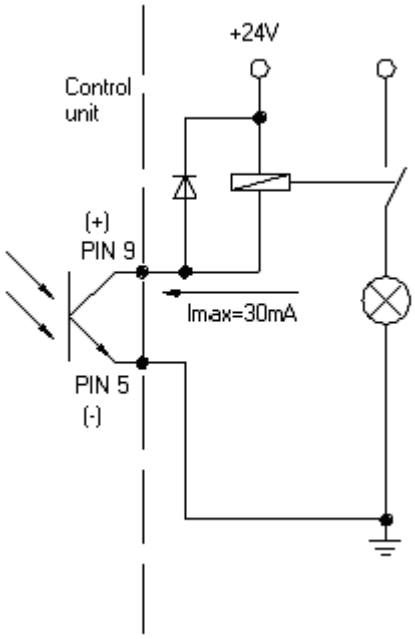
Control ouputs
By means of the signal outputs different operating states of the print module can be queried.
The signal outputs are provided by two 9-pin SUB-D-bushings (OUTPUT I and OUTPUT II) on the back side of the control unit.
They consist of optocoupler semiconductor sections, which are connected through and/or blocked according to different operating states.
The maximum allowable current in a semiconductor section is Imax = 30 mA.

Output I
Illustration above, A

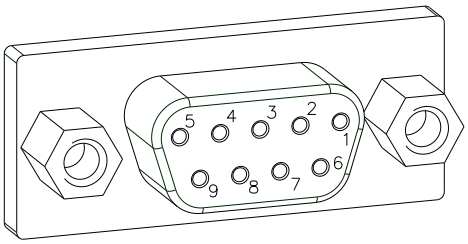


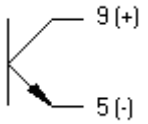
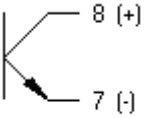
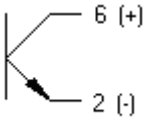
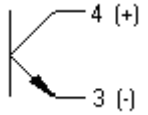
PIN (bushing)	Output I
	Out 1: Error message Each error status such as ribbon error is displayed.
	Out 2: Print order The print module was activated by a print order.
	Out 3: Generation The print module is filled with current layout data.
	Out 4: Layout print The content of print memory is transferred on the printable medium by means of the printhead.

Example:
Connection of a lamp to a 24V relay by Out 1:



Output II
Illustration on page 54, C



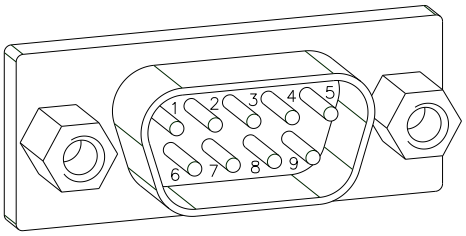
PIN (bushing)	Output II
	Out 5: Print-Ready signal It is indicated if the print module is ready to process a start impulse. In contrary to the print order signal, the generating time is taken into consideration.
	Out 6: Printhead up The printhead has reached the upper rest position (e.g. return to zero point).
	Out 7: Return to start After termination of print procedure the flexible part of the print module is moved back to the start position. After the start position was reached a new start can be released.
	Out 8: Prior warning of transfer ribbon end

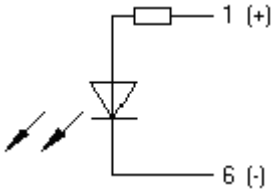
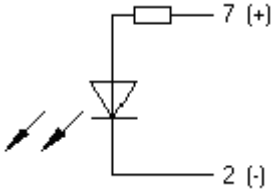
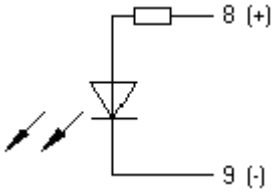
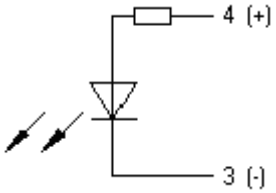
Control inputs

By means of the control inputs, printing can be controlled. The control inputs at Input I are galvanic separated and have to be provided with an external voltage source. The signal level is active "HIGH".

Input I

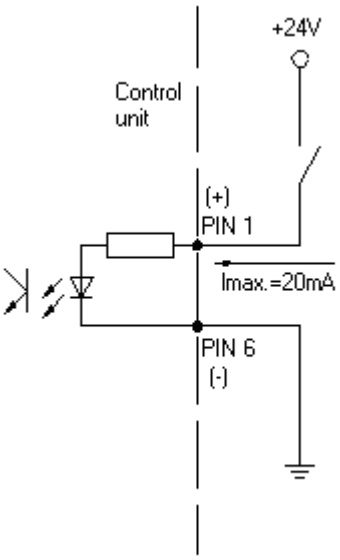
Illustration on page 54, B



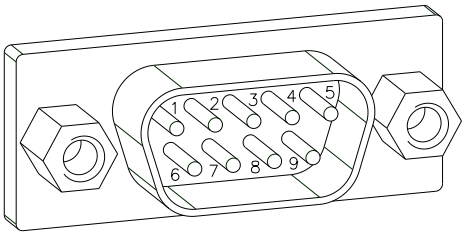
PIN (pin)	Input I
	In 1: Print start
	In 2: Not used
	In 3: Reset external counter
	In 4: Not used

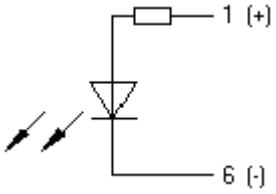
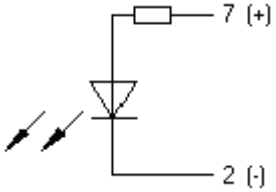
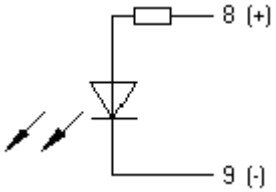
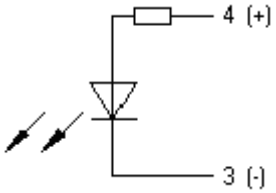
Example

Connection of a switch with 24V voltage supply by In 1:



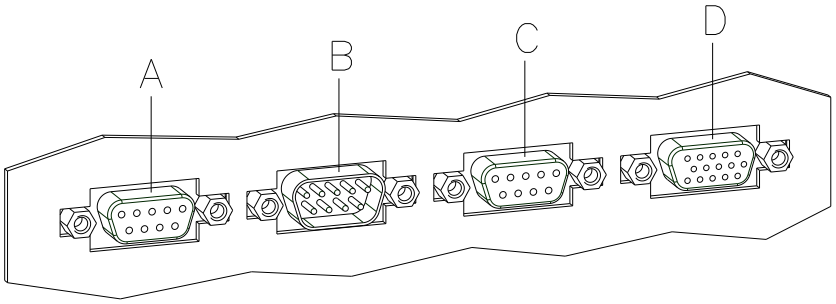
Input II
Illustration on page 54, D



PIN (pin)	Input II
	In 5: Not used
	In 6: Not used
	In 7: Not used
	In 8: Not used

Control Inputs and Outputs (Version II)

Plug connection - back side of control unit



A = External output 1-4 (Output I)
B = External input 1-4 (Input I)
C = External output 5-8 (Output II)
D = External bushing 15pin (I/O-24)

Control outputs

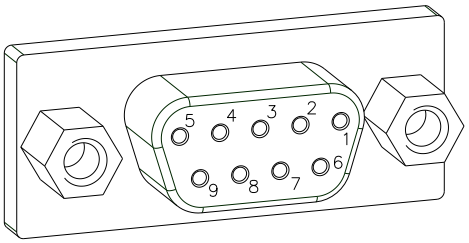
By means of the signal outputs different operating states of the print module can be queried.

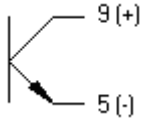
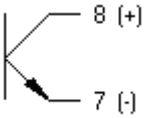
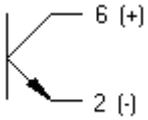
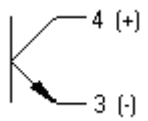
The signal outputs are provided by two 9-pin SUB-D-bushings (OUTPUT I and OUTPUT II) on the back side of the control unit.

They consist of optocoupler semiconductor sections, which are connected through and/or blocked according to different operating states.

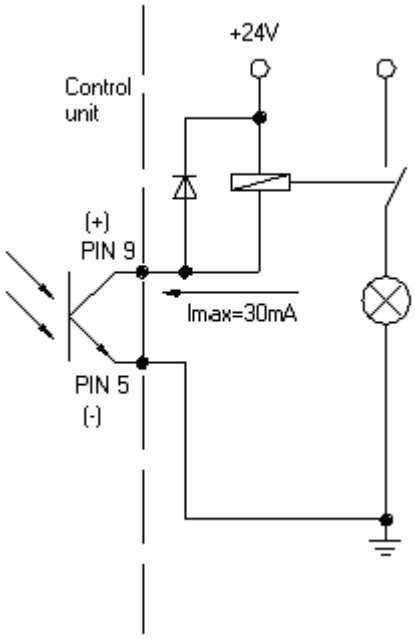
The maximum allowable current in a semiconductor section is Imax = 30 mA.

Output I
Illustration above, A

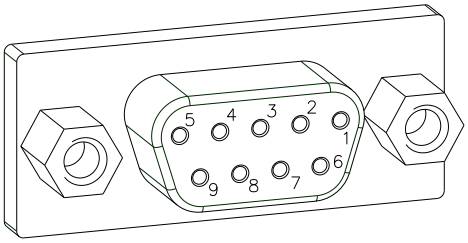


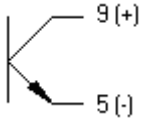
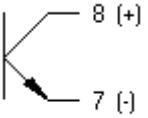
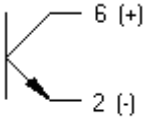
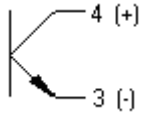
PIN (bushing)	Output I
	Out 1: Error message Each error status such as ribbon error is displayed.
	Out 2: Print order The print module was activated by a print order.
	Out 3: Generation The print module is filled with current layout data.
	Out 4: Layout print The content of print memory is transferred on the printable medium by means of the printhead.

Example:
Connection of a lamp to a 24V relay by Out 1:



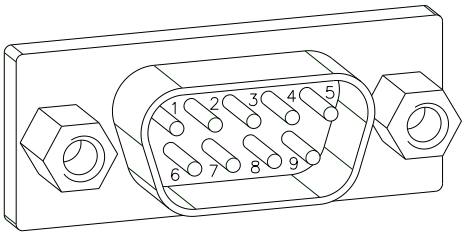
Output II
Illustration on page 58, C

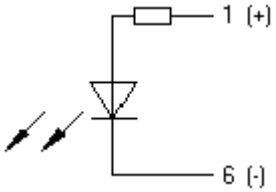
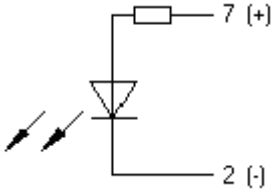
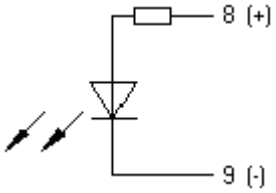
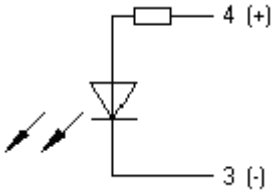


PIN (bushing)	Output II
	Out 5: Print-Ready signal It is indicated if the print module is ready to process a start impulse. In contrary to the print order signal, the generating time is taken into consideration.
	Out 6: Printhead up The printhead has reached the upper rest position (e.g. return to zero point).
	Out 7: Return to start After termination of print procedure the flexible part of the print module is moved back to the start position. After the start position was reached a new start can be released.
	Out 8: Prior warning of transfer ribbon end

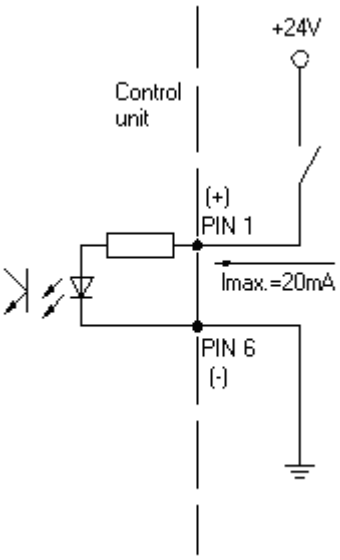
Control inputs
By means of the control inputs, printing can be controlled. The control inputs at Input I are galvanic separated and have to be provided with an external voltage source. The signal level is active "HIGH".

Input I
Illustration on page 58, B



PIN (pin)	Input I
	In 1: Print start
	In 2: Not used
	In 3: Reset external counter
	In 4: Not used

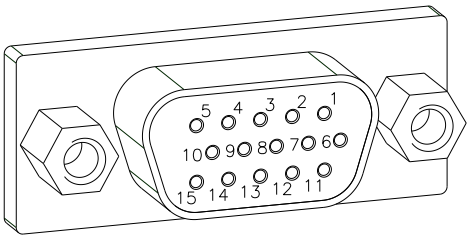
Example
Connection of a switch with 24V voltage supply by In 1:

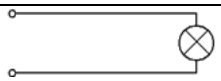


External bushing I/O-24
Illustration on page 58, D

This input is executed as 15-pole and provides user-sided 24V/100mA.

In case of using this bushing, exists **no galvanic separation**.

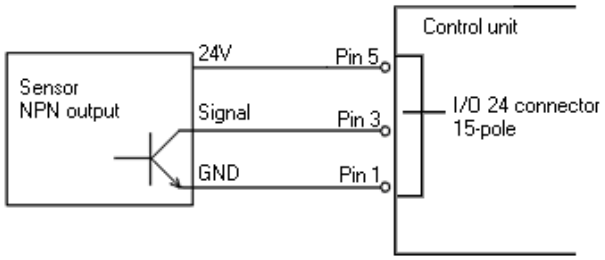


PIN	Function
1, 6	Gnd
5, 10	24 V / 100 mA
3	Print start (NPN initiator)
2	Print start (PNP initiator)
4 14	 Print start by potential-free contact
7 13	 Signal lamp 24 V / 100 mA (error)

Cable identification

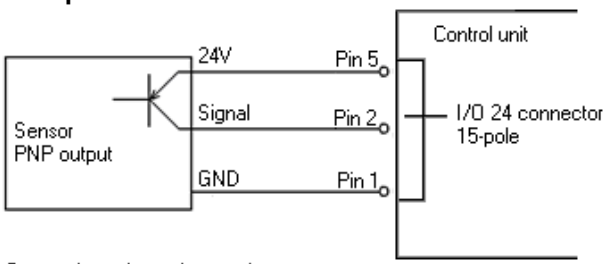
Number	Color
1	white
2	brown
3	green
4	yellow
5	grey
6	pink
7	blue
8	red
9	black
10	violet
11	grey-pink
12	red-blue
13	white-green
14	brown-greed
15	white-yellow
16	yellow-brown
17	white-grey
18	grey-brown
19	white-pink
20	pink-brown
21	white-blue
22	brown-blue
23	white-red
24	brown-red
25	white-black
26	brown-black

Example 1



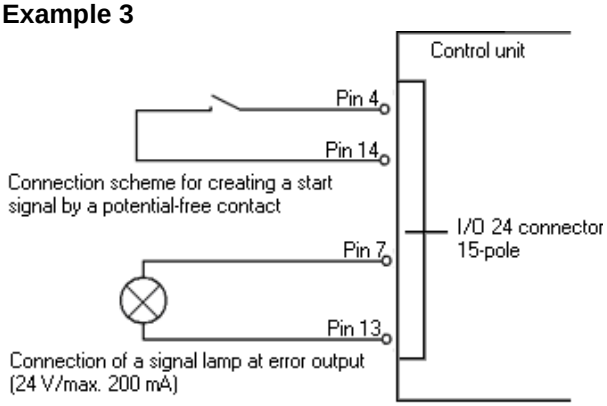
Connection scheme for creating a start signal by a sensor with NPN output

Example 2



Connection scheme for creating a start signal by a sensor with PNP output

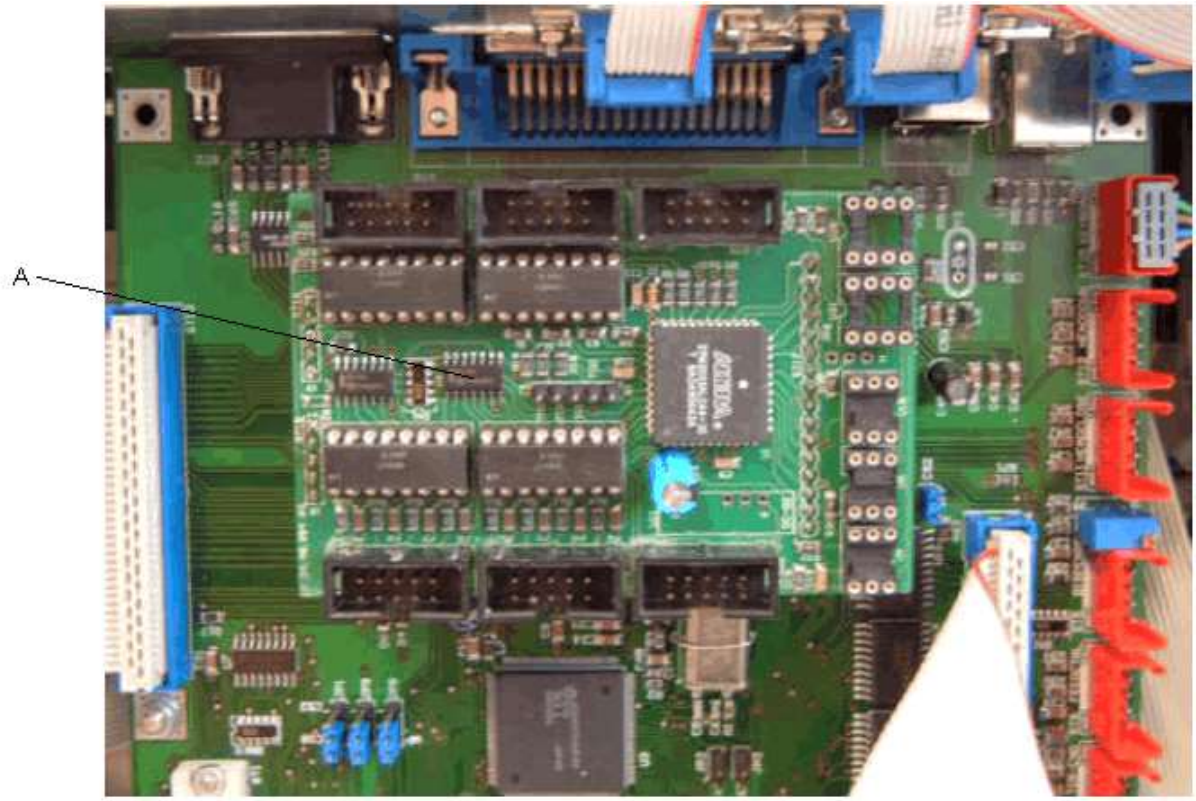
Example 3



OPTIONS

Refit RS-485 Plate and RS-422 Plate

Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to equip the machine with options.



Remove the machine cover.

Replace the already existing input/output plate (A) by a plate with either RS-485 or RS-422 extension.

Replace the line to INPUT2 by a line with 9pin DSUB socket.

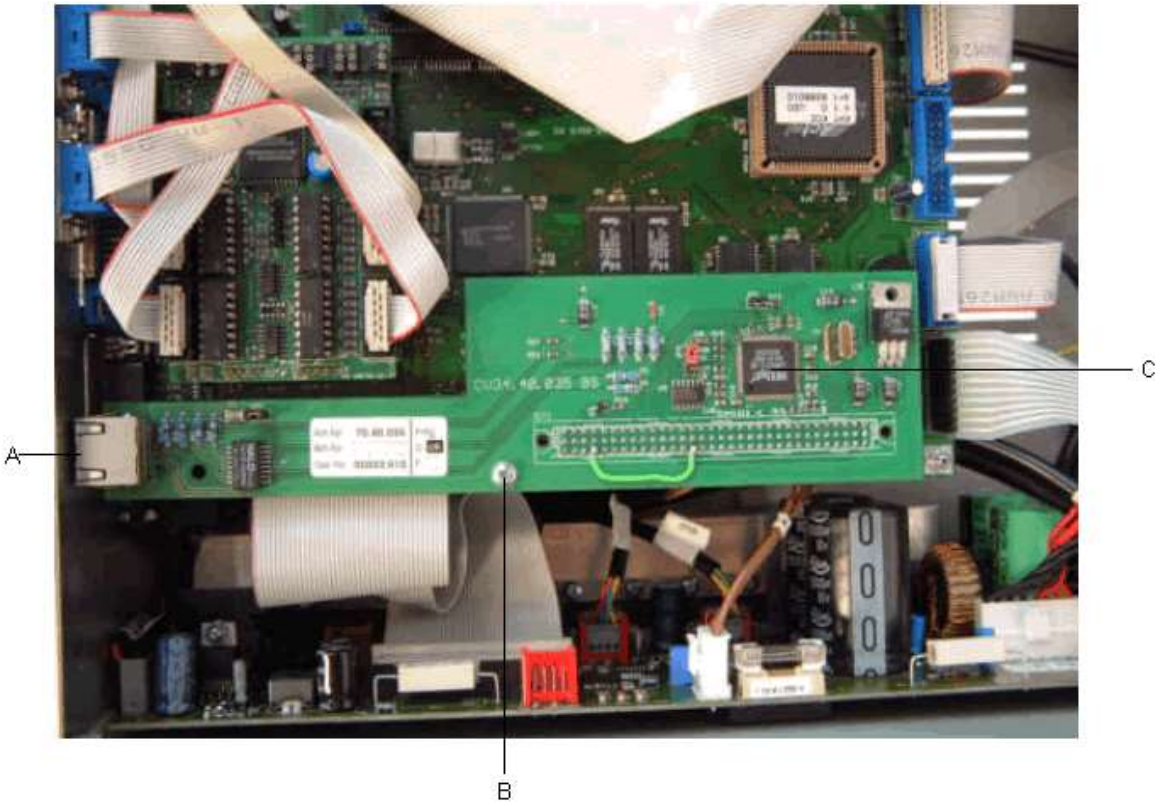
Connect the new line in plug-in position ST5 onto the input/output plate.

Connect OUTPUT1, INPUT1 and OUTPUT2 according wiring plan.

Install again the machine cover.

Refit Ethernet Plate

Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to equip the machine with options.



Remove the machine cover.

Remove the cover at break-through (A).

Unscrew the fixing screw (B).

Screw the distance bolt M3x15 at this position.

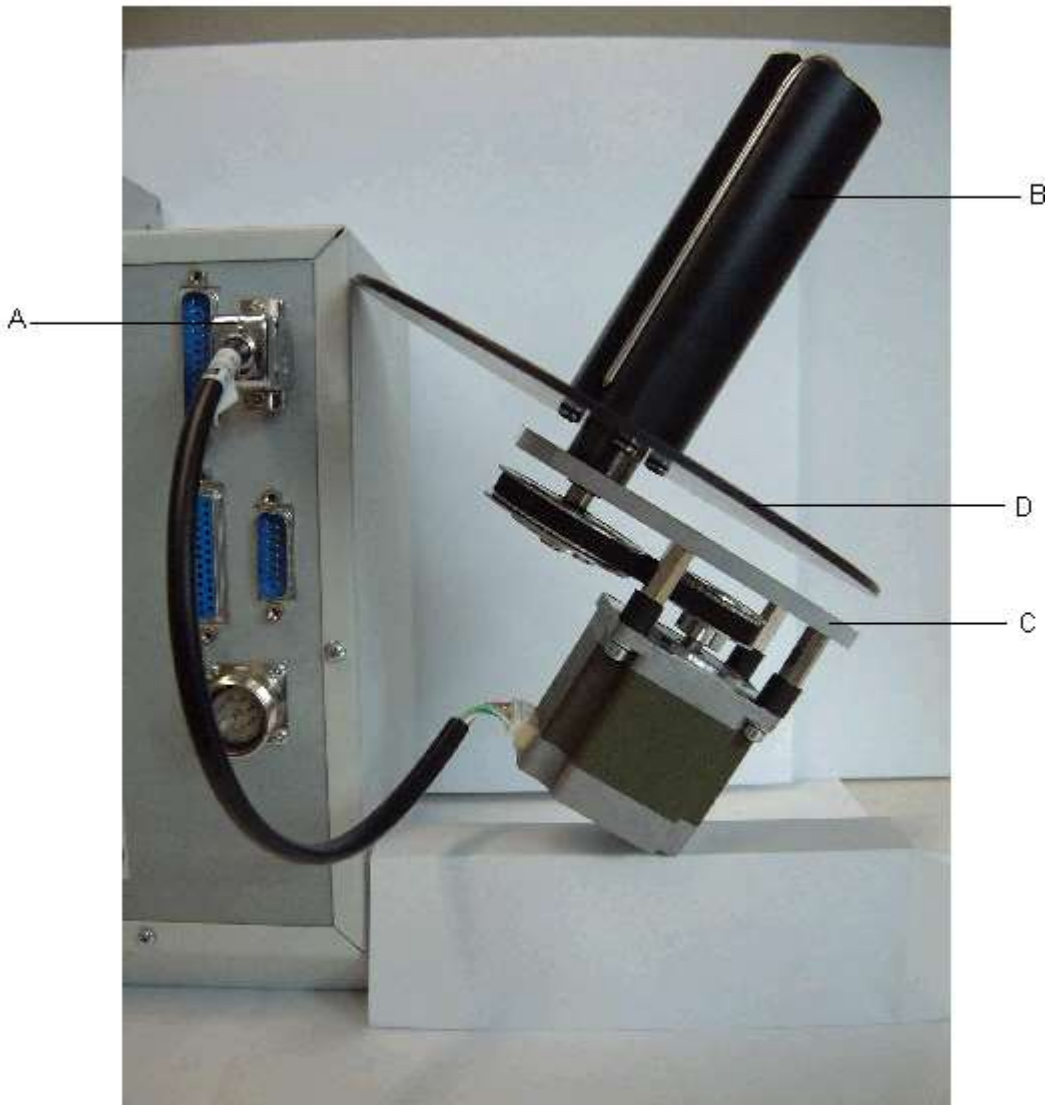
Guide the Ethernet plate (A) into the break-through (A) and connect the plate to ST1 onto CPU.

Fix the plate with the previously removed screw (B) at the distance bolt.

Install again the machine cover.

Refit External Rewinder

Attention: Unplug the machine!
Only experienced staff is allowed to open the machine and to equip the machine with options.



Guide the 9pin DSUB plug (A) of the rewinding unit (B) into the appropriate bushing at the side panel of the print mechanics.

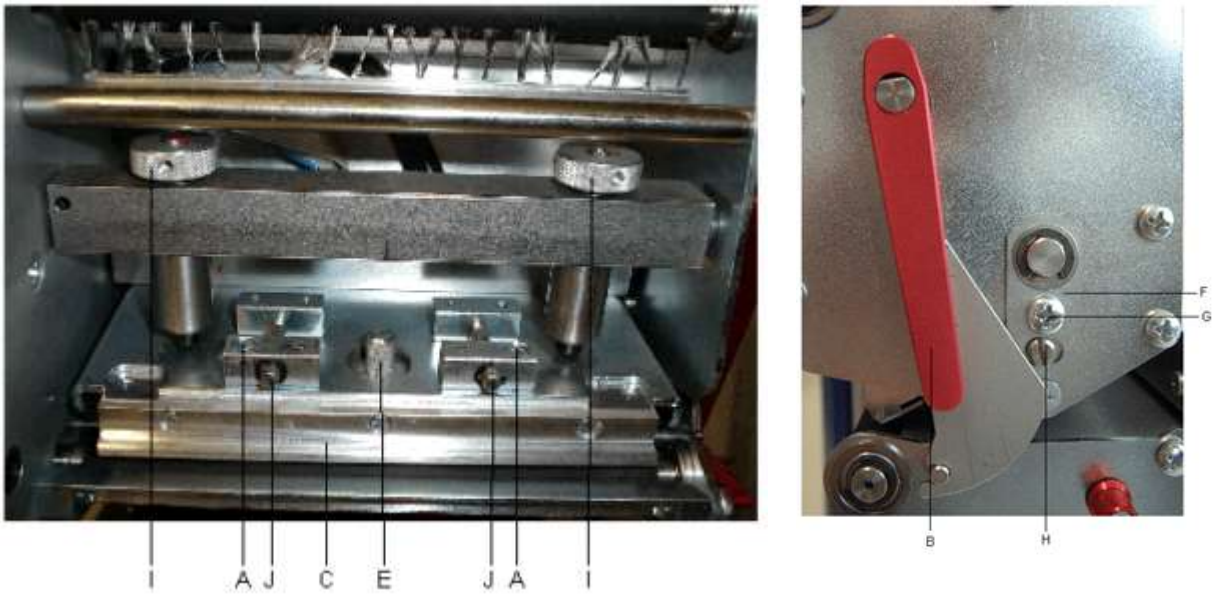
Fix the rewinding unit with the appropriate thread of the supporting plate (C) at a plate or strut of your choice.

Please note that the position of disc (D) agrees with the label edge at the unwinding unit.

MECHANICS

Replace the Printhead Flat Type KF

Attention: Unplug the printer!



Note: Please note that you have to observe the ESD regulations for replacing the printhead! Do not touch the contacts of printhead!

Open the cover of print module.

With closed printhead, loosen the screws (A) by means of an Allen key.

In order to open the printhead, turn the right lever (B) anticlockwise (left version, in clockwise direction).

Now the printhead should be situated freely onto the pressure roll. Otherwise you have to loosen again the screws (A).

Move the printhead carefully to the front until you can reach the connectors.

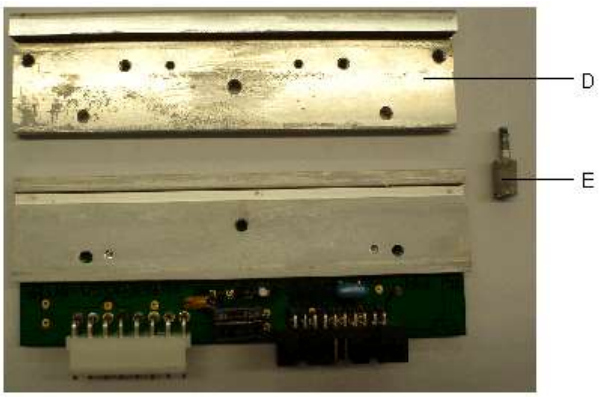
Press the clip onto right connector in order to remove the connector. Remove the left connector carefully and remove afterwards the printhead.

Unscrew the knurled knob (E) in order to remove the aluminium intermediate plate (D) of printhead.

Note the resistance value (R = xxx) that is find onto type plate of the new printhead.

By means of the knurled knob (E) mount the aluminium intermediate plate (D) onto the new printhead.

Install the new thermal printhead in reverse order.



When re-installing the printhead, please take care that the printhead locks in the printhead bracket.

Close the printhead, tighten again the screws (A) and switch on the print module.

Control the position of printhead by means of a test print. In case the print quality does not come up to your expectation, set the parallelism as described as followed.

In case the resistance value onto the type plate of the printer is different from the value of the old printhead, enter the service functions menu of the printer and enter the correct value (dot resistance).

Note: Improper handling is difficult to prove and therefore the producer does not grant guarantee for the printhead.

Adjust the Printhead Flat Type KF

Parallelism

An important characteristic for a high quality print is the parallelism of the focal line of the thermal printhead to the pressure roll. Because of the fact that the position of focal line of the printhead depends on fluctuations caused by production, it is necessary to set the parallelism.

By means of a hexagon key unscrew the screws (D) by approx. ¼ turn.

Set parallelism with the adjusting screws (E).
Turn in clockwise direction and the printhead moves backwards.
Turn anticlockwise and the printhead moves forwards.

Depending on the print quality of the test print, turn the screws as long as the print quality comes up to your full expectation.

Screw again the screws (D).

Start a print order with approx. 5 to 10 labels and control the correct and wrinkle free ribbon. In case of wrinkles then you have again to check parallelism.

Pressure balance right/left

After adjusting the parallelism and no even strong pressure exists over the complete print width, by means of a plate (F) you can set the balance as follows:

Unscrew with a screwdriver the screw (G) by approx. ¼ turn.

By means of an excentric pin (H) you can create by turning a balance of pressure.

Adjust the printing corresponding to the test print as long as this results in an even printing.

Screw again the screw (G).

Start a print order with approx. 5 to 10 labels and control the correct and wrinkle free ribbon. In case of wrinkles then you have again to check parallelism or balance of pressure.

Pressure

Note: It is recommended to avoid increasing the printhead pressure because too high pressure damages the printhead res. reduces its life.

The pressure is set from the manufacturer according to the specification of the printhead.

Select the lowest possible setting to optimise the life of printhead.

By means of tpressure screws (I) you can modify the printhead pressure without tools.

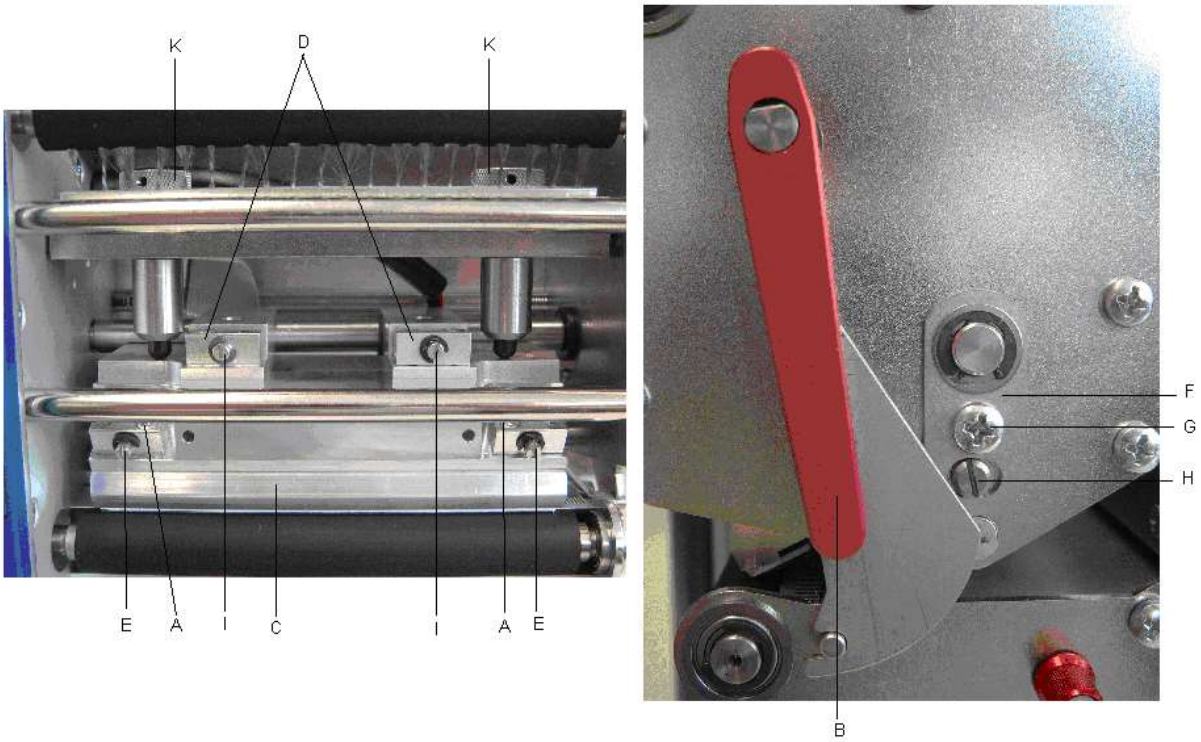
If the pressure screws are turned in clockwise direction to the end, then the pressure is increased by 10N in contrast to the factory setting.

If you want to set the factory setting then you have to turn the pressure screws by the right side exactly by 1 turn anticlockwise.

It is importantly that the knurled button which is coated with protective lacquer is not removed from the pressure screw as otherwise the above mentioned settings are faulty.

Replace the Printhead Corner Type KCE

Attention: Unplug the printer!



Note: Please note that you have to observe the ESD regulations for replacing the printhead! Do not touch the contacts of printhead!

Open the print module cover.

Close the printhead, then unscrew the knurled screws (A) by means of an Allen key.

Move the printhead up by turning the red lever (B) anticlockwise.

Now the printhead (C) should be freely onto the pressure roll (otherwise unscrew again the knurled screws).

Remove the thermal printhead carefully to the front until you have access to the connectors.

Press clip onto right connector in order to remove connector. Afterwards remove left connector carefully and remove printhead.

Note the resistance value which you can find on the type plate of the new printhead and install the new thermal transfer printer in reverse order.

When re-installing pay attention that printhead locks in printhead bracket.

Close the printhead and tighten again the screws (A) and then switch on the printer.

Control the position of printhead by means of a test print. In case the print quality does not come up to your expectation, set the parallelism as following described.

In case the resistance value onto the type plate of the printer is different from the value of the old printhead, enter the service functions menu of the printer and enter the correct value (dot resistance).

Note: Improper handling is difficult to prove and therefore the producer does not grant guarantee for the printhead.

Adjust the Printhead Corner Type KCE

Parallelism

An important characteristic for a high quality print is the parallelism of the focal line of the thermal printhead to the pressure roll. Because of the fact that the position of focal line of the printhead depends on fluctuations caused by production, it is necessary to set the parallelism.

The form of the printhead KCE needs the setting of parallelism in direction of the adjusting angle and in horizontal position. It needs a little bit of experience to know in which direction you have to adjust the printhead to receive a high quality printing.

Unscrew the screws (A or D) by approx. ¼ turn by means of a hexagon key.

Set parallelism with the adjusting screws (E or I).
Turn in clockwise direction and the printhead moves backwards.
Turn anticlockwise and the printhead moves forwards.

Depending on the print quality of the test print, turn the screws as long as the print quality comes up to your full expectation.

Screw again the screws (A or D).

Start a print order with approx. 5 to 10 labels and control the correct and wrinkle free ribbon. In case of wrinkles then you have again to check parallelism.

Pressure balance right/left

After adjusting parallelism and no even strong pressure exists over the complete print width, by means of a plate (F) you can set the balance as follows:

Unscrew with a screwdriver the screw (G) by approx. ¼ turn.

By means of an excentric pin (H) you can create by turning a balance of pressure.

Adjust the printing corresponding to the test print as long as this results in an even printing.

Screw again screw (G).

Start a print order with approx. 5 to 10 labels and control the correct and wrinkle free ribbon. In case of wrinkles then you have again to check parallelism or balance of pressure.

Pressure

Note: It is recommended to avoid increasing the printhead pressure because too high pressure damages the printhead res. reduces its life.

The pressure is set from the manufacturer according to the specification of the printhead.

Select the lowest possible setting to optimise the life of the printhead.

By means of the pressure screws (K) you can modify the printhead pressure without tools.

If the pressure screws are turned in clockwise direction to the end, then the pressure is increased by 10N in contrast to the factory setting.

If you want to set the factory setting then you have to turn the pressure screws by the right side exactly by 1 turn anticlockwise.

It is importantly that the knurled button which is coated with protective lacquer is not removed from the pressure screw as otherwise the above mentioned settings are faulty.

Adjust the Rewinder / Unwinder

Attention: Unplug the machine!
Only experienced staff is allowed to open, repair and adjust the machine.

Due to the many different transfer ribbon variants regarding roll width, length and qualities it is necessary to provide the possibility to set transfer ribbon tension.

The transfer ribbon tension is to set in such way that no wrinkles in the ribbon appear but it is transported in the same way as the labels.

When using a too high ribbon tension this results usually in an excellent run of the transfer ribbon but this could lead to streaks onto the label or to a rip of ribbon particularly with narrow roles.

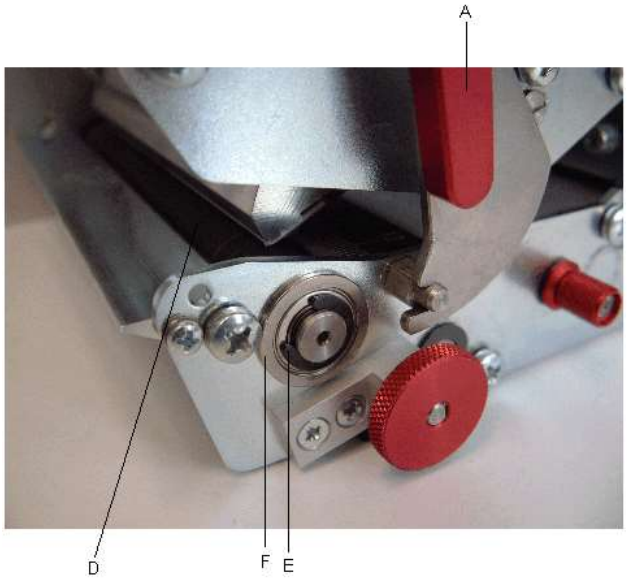
Ex factory the role tension is set to a transfer ribbon 110 mm width and standard quality. As approximate values for the factory setting the following can be accepted:

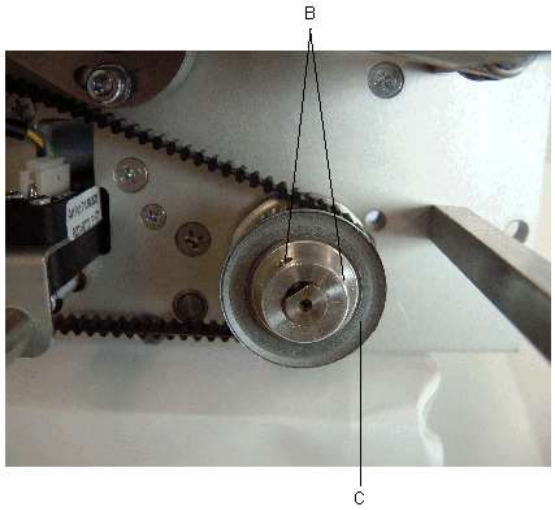
Unwinder:	distance of screw head (A) to roll face (B) = 2 mm
Rewinder:	distance of screw head (A) to roll face (B) = 4 mm

Screw the hexsocket head screw (A) to increase the transfer ribbon tension.
Unscrew the hexsocket head screw (A) to reduce the transfer ribbon tension.

Replace the Pressure Roll

Attention: Unplug the machine!
Only experienced staff is allowed to open, repair and adjust the machine.





Remove the cover at the rear of the print mechanics
Unscrew 2 screws at the rear and 3 at the connection side.

Open the printhead by turning the pressure lever (A) anticlockwise.

Unscrew the pins (B) from belt drive (C) of the pressure roll (D).

Remove the protective disc (E) and the ball bearing (F).

Push the pressure roll (D) through the drillings to the outside. During the process you have to keep the belt drive (C).

Install the new roll in reverse order.

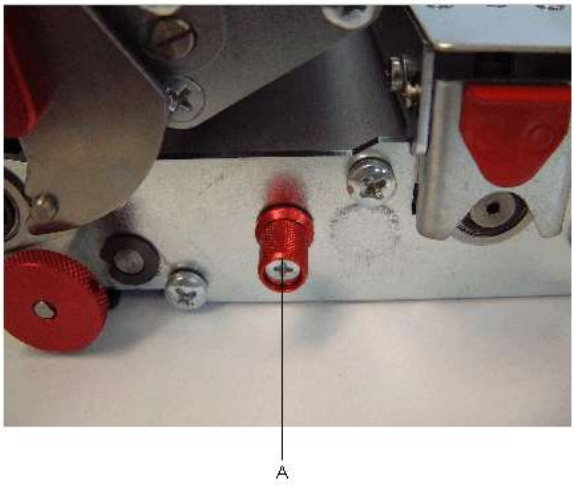
When installing the belt drive (C) anew you have to make sure that a pin (B) has to meet the milled surface of roll axe. Screw again the pins (B) firmly.

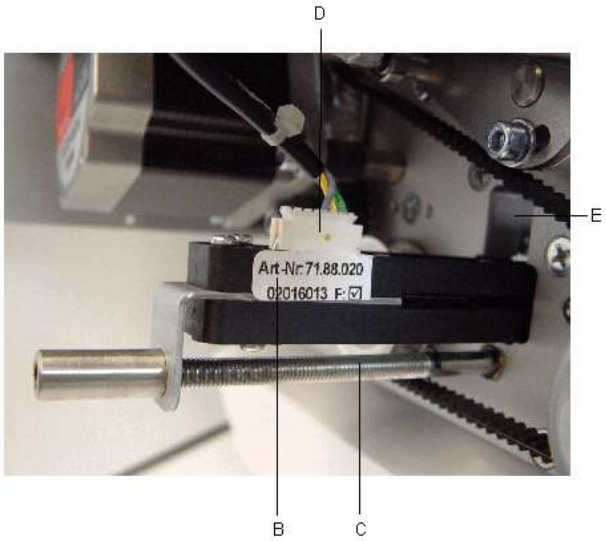
The roll has to be very fix.

Install again the machine cover.

Replace / Clean the Label Photocell

Attention: Unplug the machine!
Only experienced staff is allowed to open, repair, adjust and clean the machine.





Remove the cover at the rear of the print mechanics
Unscrew two screws at the rear and three at the connection side.

Turn the knurled knob (A) anticlockwise until you can remove the photocell (B) from the straight shaft (C).

Disconnect the plugs (D) from the photocell.

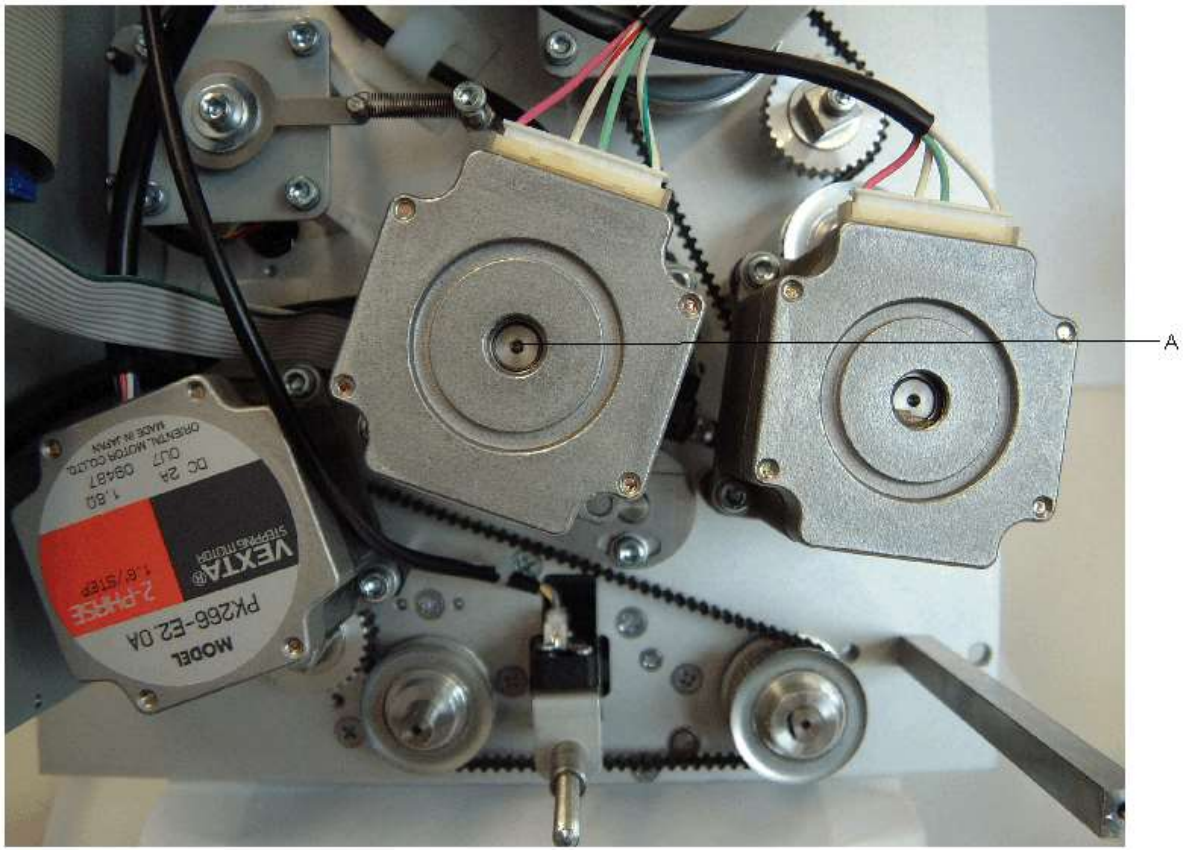
Install the photocell in reverse order.

Make sure that when re-installing the photocell the support is in the middle of the break-through (E). One-side tilting can cause a worse photocell level or label jam.

Install again the machine cover.

Adjust the Pressure Curve of Ribbon Save

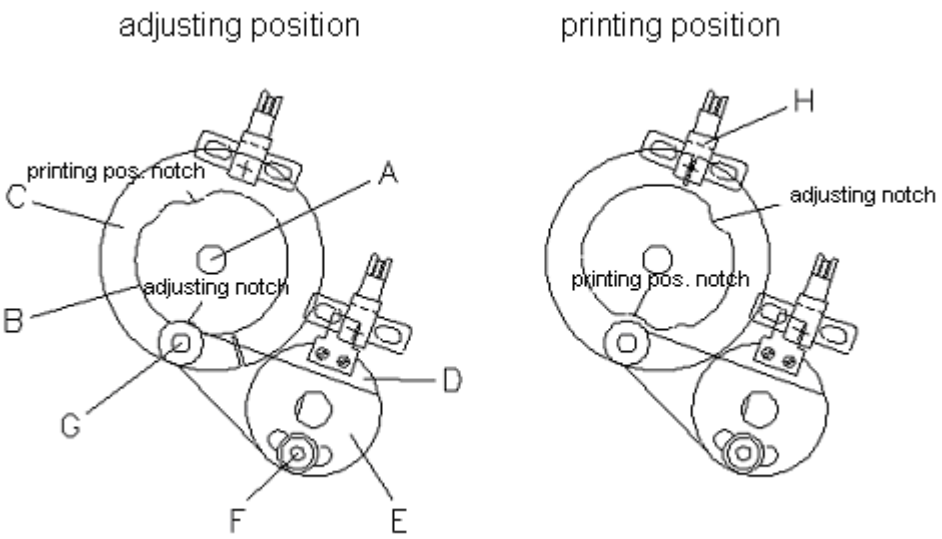
Attention: Unplug the machine!
Only experienced staff is allowed to open, repair and adjust the machine.



In case the ribbon savings function is activated and you can note that the printhead does not move far away from the label material, it is necessary to adjust the pressure curve anew. This curve is situated onto the axe of the ribbon savings motor (A).

Remove the cover at the rear of the print mechanics
Unscrew two screws at the rear and three at the connection side.

You can find a detailed description on the following page.



The illustration shows the axe of the ribbon savings motor (A) with pressure curve (B) and disc (C) from the rear. Underneath is the bush bearing (D) with sole plate (E).

Close the printhead.

Unscrew the hexsocket head screw (F) by approx. one turn until the sole plate (E) with the set ball bearing (G) is freely mobile.

Turn by hand the motor shaft with pressure curve and disc into the illustrated adjusting position.

Press the sole plate (E) with ball bearing (G) into the adjusting notch of the pressure curve, so that they are fix and no more play exists. Screw the hexsocket head screw (F) firmly.

Open the printhead.

Turn by hand the motor shaft with pressure curve and disc into the illustrated printing position.

Close the printhead.

Turn by hand the motor shaft with pressure curve and disc to the left and right, until you feel an easy resistance. If the slot in the disc moves in each case slightly on the right and on the left side from the photocell (H), the pressure curve is correctly adjusted.

If the gap should not be in the range of the photocell, the following causes are possible:

- For the adjustment the wrong notch onto the pressure curve was used.
- The pressure curve is rotated to the disc onto the motor shaft.
  The gap of disc has to be exactly opposite the pressure position notch!

Connect the protective conductor at the inside of the machine cover.

Push the machine cover onto the chassis.

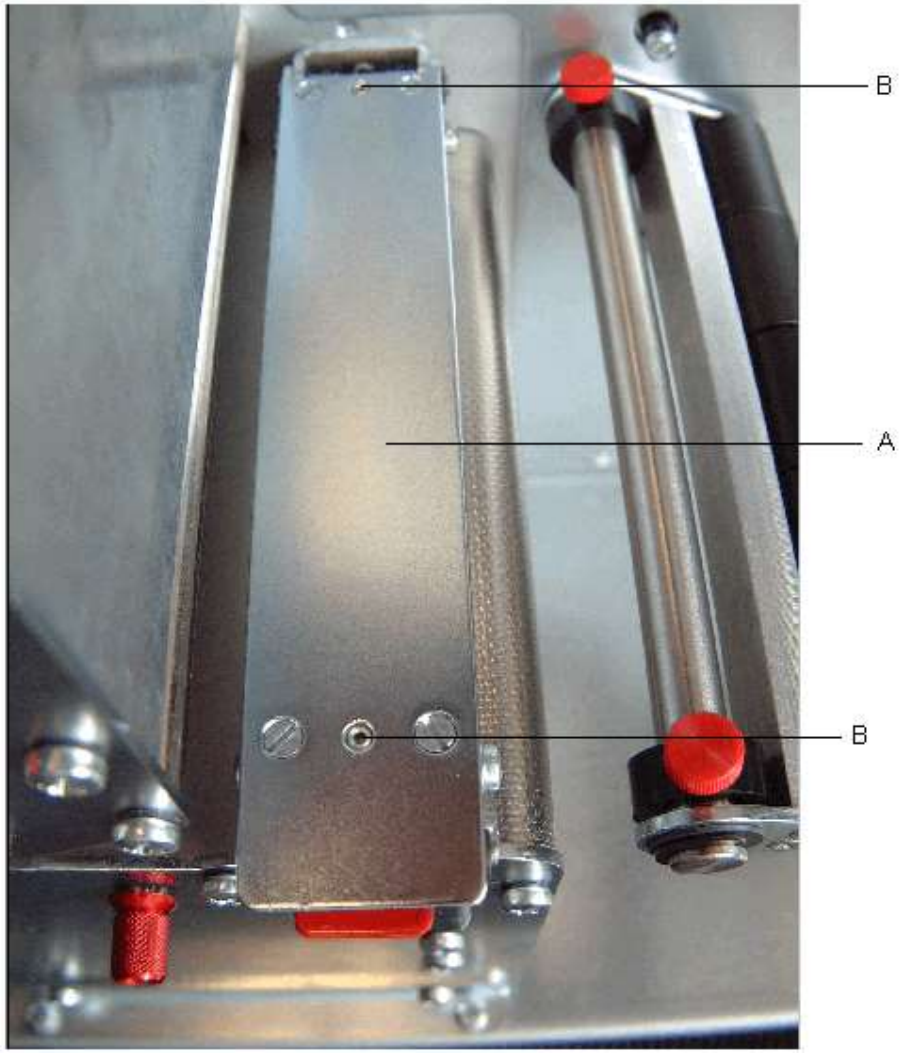
Switch the machine on.

Use the keys ▲ and ▼ in order to move the printhead up and down. In case you use very thick label material it could be possible that the printhead is not sufficiently moved up. There are the following possibilities to position the printhead correctly:
Repeat again the adjusting steps and place the label material during the work between printhead and roll.

Install again the machine cover.

Adjust the Rail of Ribbon Save

Attention: Unplug the machine!
Only experienced staff is allowed to open, repair and adjust the machine.



In case at an activated ribbon savings function jamming of paper occur or the position of the print onto the label is not correct, then this could arise because of the wrong setting of rail (A).

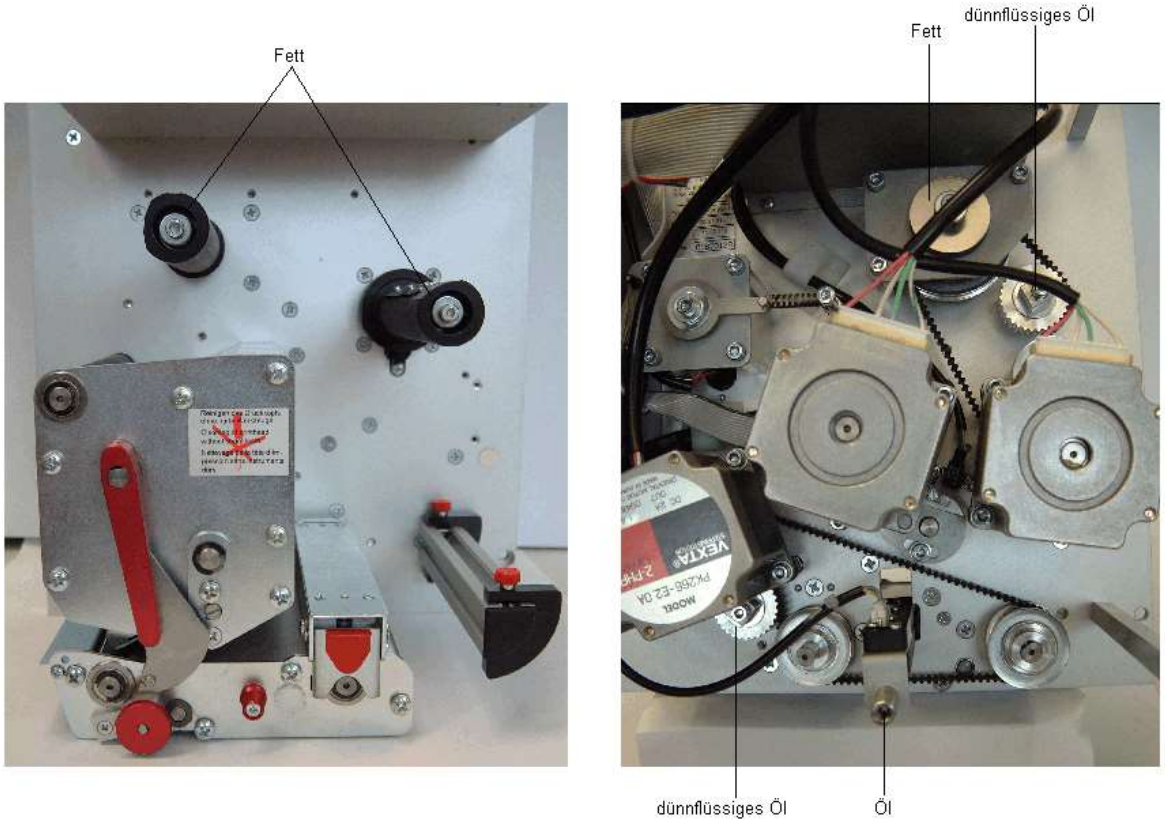
If the printhead is moved up, the rail (A) in connection with the below placed transport roll is responsible for the label feed. The pressure of rail should correspond approximately to the one of the printhead. The work setting corresponds to an average for standard labels. For very narrow, extremely smooth or thick labels a deviating setting can be necessary.

Change the pressure by using the pins (B).
Screw the pins (B) and you can increase the pressure.
Unscrew the pins (B) you can decrease the pressure.

By means of test prints you can adjust the specific pressure you need for your application.

Oil and Lubricate

Attention: Unplug the machine!
Only experienced staff is allowed to open, repair, adjust and clean the machine.



Make sure when oiling and greasing that no lubricants deposit on photocells, electronic components, circuit boards, printhead and rolls.

In case that dust or other dirt is deposit you have to clean the lubrication at first with alcohol.

Apply rather in regular intervals (once or twice a year) a bit of lubricant, as only rarely too much. Otherwise the surplus of lubricant could settle on neighbouring components and disturb the functions.

In case that components should have run it because of lack of lubricant, replace these as soon as possible so the functions of the components and the machine remain.

Install again all components which you have dismantled for the lubrication in the correct position. Take care e.g. tensions of belt, springs etc.

CONNECTION PLAN OF BACK PANEL PLUGS

Motors

PIN	Signal
1-2; 14-15	FEED motor
3-4, 16-17	HEAD Motor
5	24V
7-8; 19-20	RIBBON motor

Printhead Signals

PIN	Signal
1, 14	5V
2, 10, 15-18	GND
3	DATAIN
4	CLOCK
5	/LATCH
6	B.E.O.
7	/STR2
8	/CONT2
9	/CONT4
19	/STR1
20	/CONT1
21	/CONT3
22	/CONT5
23	THERM

Sensors

PIN	Signal
2,8	GND
1-9	LABEL, PULLUP
10	5V
3, 11	RIBBONCTRL, PULLUP (transfer ribbon photocell)
6, 14	TCREND, PULLUP

CONNECTION PLAN INTERFACES

Centronics

PIN	Signal
1	STROBE
2-9	DATA1-8
10	ACK
11	BUSY
12	PERROR
13	SELECT
14	AUTOFD
15-16	GND
18	VCC1284 (4,7V)
19-30	GND
31	INIT
32	FAULT
33-35	XXX
36	SELECTIN

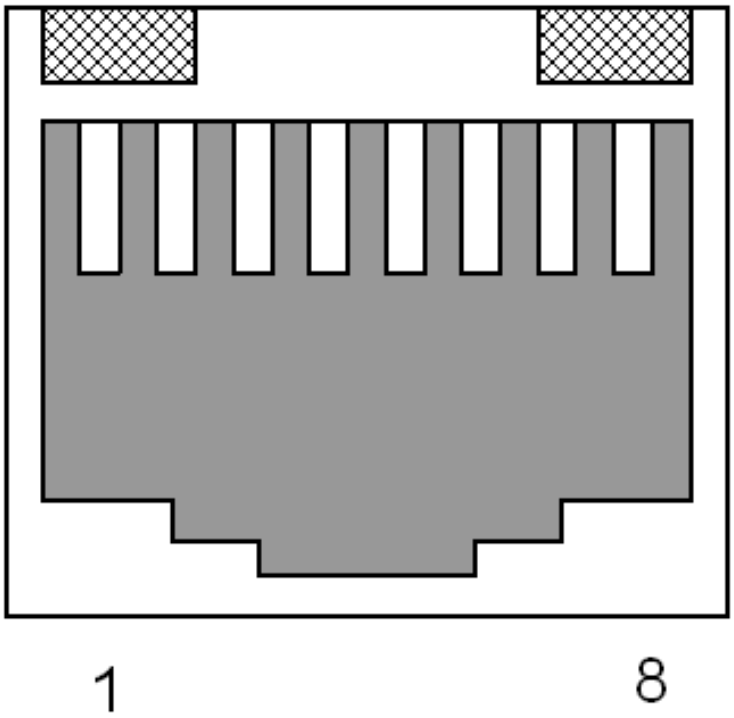
RS-232

PIN	Signal
1	XXX
2	RXD
3	TXD
4-5	GND
6-9	XXX

RS-485 and RS-422

PIN at D-SUB socket	Function RS-422 (full duplex)		Function RS-485 (half duplex)	
1	n/c		n/c	
2	n/c		n/c	
3	n/c		n/c	
4		TxD−	n/c	
5		TxD+	n/c	
6	n/c			TxD (RTxD)−
7	n/c			TxD (RxD)+
8		RxD−	n/c	
9		RxD+	n/c	

Ethernet



PIN RJ45-socket	Description	
1		TX+
2		TX−
3		RX+
4	n/c	
5	n/c	
6		RX−
7	n/c	
8	n/c	

Index

A

B

C

D

E

F

I

J

L

M

O

P

R

S

T

U

V

W

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