valentin DRUCKSYSTEME

DYNACODE II IP

Ingress Protection Version
Operating Manual

Quality . Tradition . Innovation

Information on the scope of delivery, appearance, performance, dimensions and weight reflect our knowledge at the time of printing.

We reserve the rights to make modifications.

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 direct print modules comply with the following EU directives:

- EU Low-Voltage Directive (2014/35/EU)
- EU Electromagnetic Compatibility Directive (2014/30/EU)

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1 Introduction

1.1 General Instructions

Basic information and warning references with the corresponding signal words for the danger level are as follows specified in this manual:

DANGER identifies an extraordinarily great and immediate danger which could lead to serious injury or even death.

WARNING identifies a possible danger would could lead to serious bodily injury or even death if sufficient precautions are not taken.

WARNING of cutting injuries.

Pay attention that cutting injuries caused by blades, cutting devices or sharp-edged parts are avoided.

WARNING of hand injuries.

Pay attention that hand injuries caused by closing mechanical parts of a machine/equipment are avoided.

WARNING of hot surfaces.

Pay attention so as not to come into contact with hot surfaces.

CAUTION indicates a potentially dangerous situation which could lead to moderate or light bodily injury or damage to property.

NOTICE gives you tips. They make a working sequence easier or draw attention to important working processes.

Gives you tips on protecting the environment.

⇒ Handling instruction

* Optional accessories, special fittings

`Date` Information in the display

1.2 Intended Use

The direct print module is solely intended to print suitable media which have been approved by the manufacturer. Any other or additional use is not intended. The manufacturer/supplier is not liable for damage resulting from misuse. Any misuse is at your own risk.

Intended used includes heeding the operating manual, including the maintenance recommendations/regulations specified by the manufacturer.

The direct print module may only be used while in proper working order and for the intended purpose. Users must be safe, aware of potential dangers and must comply with the operating instructions. Faults, in particular those which affect safety, must be remedied immediately.

The direct print module is a state-of-the-art device which complies with the recognized safety-related rules and regulations. Despite this, a danger to life and limb of the user or third parties could arise and the direct print module or other property could be damaged while operating the device.

NOTICE!

The complete documentation is included in the scope of delivery on CD ROM and can also currently be found in the internet.

1.3 Safety Instructions

The direct print module is designed for power supply systems of 110 … 230 V AC. Connect the direct print module only to electrical outlets with a ground contact.

Couple the direct print module to devices using extra low voltage only.

Before making or undoing connections, switch off all devices involved (computer, printer, accessories etc.).

Operate the direct print module in a dry environment only and do not get it wet (sprayed water, mist etc.).

Do not operate the direct print module in explosive atmosphere and not in proximity of high voltage power lines.

Operate the direct print module only in an environment protected against abrasive dust, swarf and other similar impurity.

Maintenance and servicing work can only be carried out by trained personnel.

Operating personnel must be trained by the operator on the basis of the operating manual.

Depending on use, ensure that clothing, hair, jewellery and similar personal items do not contact the exposed rotating parts and/or the moving parts (e.g. print carriage).

NOTICE!

With the open printing unit (due to construction) the requirements of EN 62368-1 regarding fire protection casing are not fulfilled. These must be ensured by the installation into the end device.

The print unit and parts of it (e.g. motor, printhead) can get hot during printing. Do not touch the printhead during operation. Cool down the print unit before changing material, removal or adjustment.

Never use highly inflammable consumables.

Carry out only the actions described in these operating instructions. Any work beyond this may only be performed by the manufacturer or upon agreement with the manufacturer.

Unauthorized interference with electronic modules or their software can cause malfunctions.

Other unauthorized work or modifications to the direct print module can endanger operational safety.

There are warning stickers on the direct print modules that draw your attention to dangers. Therefore the warning stickers are not to be removed as then you and others cannot be aware of dangers and may be injured.

1.4 Decommissioning and Dismantling

NOTICE!

The decommissioning of printing system can only be carried out by trained staff.

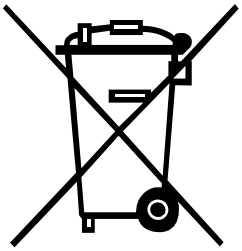
CAUTION!

Danger of injury by imprudent handling when lifting or placing the printing system.

⇒ Do not underestimate the weight of the printing system (9 … 12 kg).

⇒ Protect the printing system against uncontrolled movement.

1.5 Environmentally-Friendly Disposal



Manufacturers of B2B equipment are obliged to take back and dispose of old equipment that was manufactured after 13 August 2005. As a principle, this old equipment may not be delivered to communal collecting points. It may only be organised, used and disposed of by the manufacturer. Valentin products accordingly labelled can therefore be returned to Carl Valentin GmbH.

This way, you can be sure your old equipment will be disposed of correctly.

Carl Valentin GmbH thereby fulfils all obligations regarding timely disposal of old equipment and facilitates the smooth reselling of these products. Please understand that we can only take back equipment that is sent free of carriage charges.

The electronics board of the printing system is equipped with a battery. This must only be discarded in battery collection containers or by public waste management authorities.

Further information on the WEEE directive is available on our website www.carl-valentin.de.

2 Machine Overview

The continuous and intermittent operating direct print module is a direct print module with high resolution for installation in horizontal and vertical packaging machines. Not only the easy to change ribbon cassette and/or cleaning cassette is convincing but also different print widths, left and right versions and because of the separate control unit the direct print module can be integrated in almost each packaging process without any problems.

Flexible labelling of packaging foil is effected either by means of Windows printer driver included in delivery or by our proven design software Labelstar Office.

With eight vector fonts, six bitmap fonts and six proportional fonts the direct print module has a large selection at different font types. It can be printed inverse, in italic format or 90 degrees turned fonts.

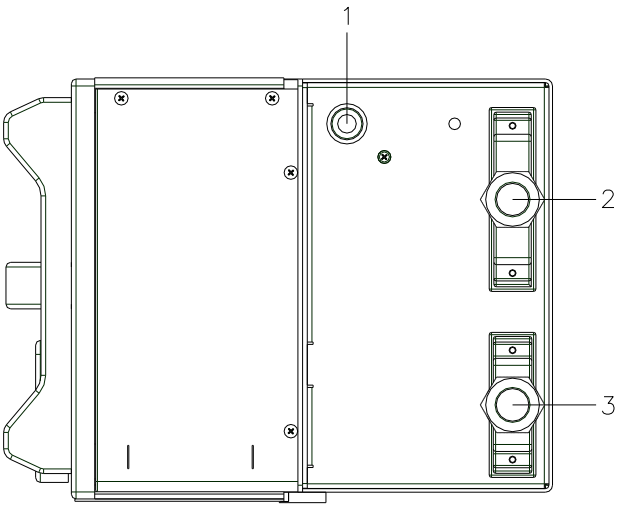
The handling of our durable direct print modules is easy and comfortable. The device settings can be made by the integrated, intuitive touch-screen display.

The advanced technology achieves a high print quality.

Time-saving firmware update is possible by interface. As default, the direct print module is equipped with a serial, USB and Ethernet interface. Additionally, the direct print module is equipped with an USB Host that permits the connection of an external USB keyboard and/or an USB memory stick. The direct print module automatically recognizes by which interface it is controlled.

Thanks to the large number of options the direct print module can be adapted to each task.

2.1 Connection Side of Print Mechanics



A = Pneumatic connection

B = Connecting cable SPI (printhead + sensors)

C = Connecting cable Power

Figure 1

2.2 Connector Assignment of Control Unit

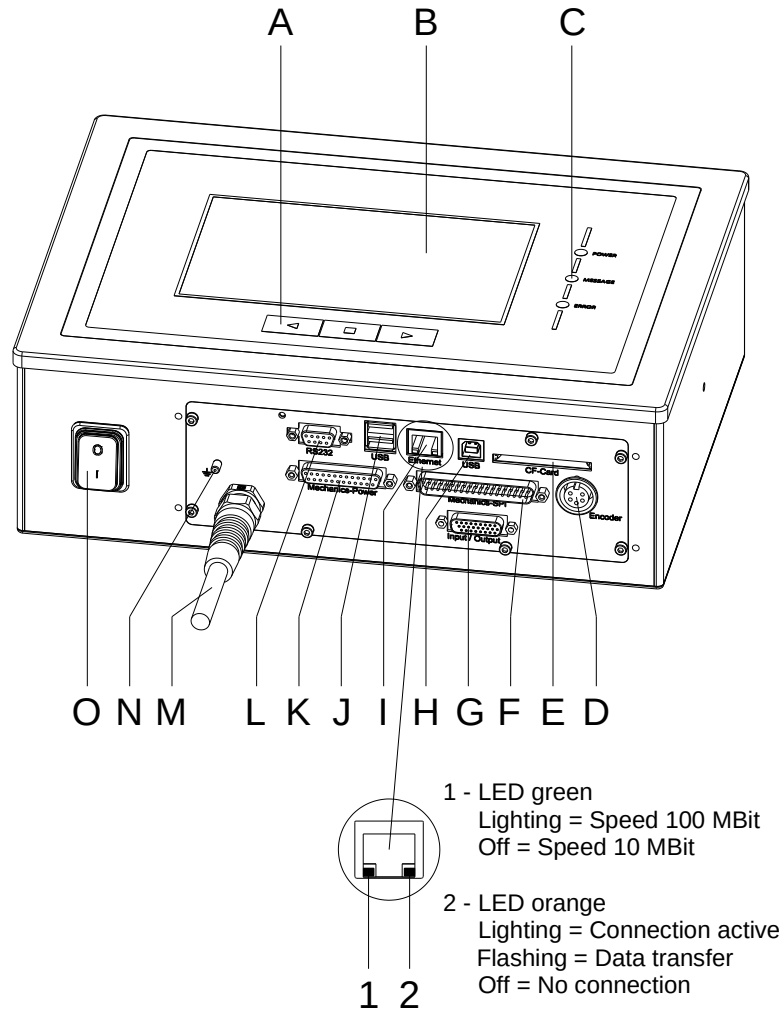


Figure 2

A = Function keys
B = Touch Panel
C = Status LED
D = Encoder connection
E = Slot for memory card
F = Connecting cable SPI
G = External inputs/outputs
H = USB port
I = Ethernet port
J = USB host for USB keyboard and USB stick
K = Connecting cable Power
L = Serial interface RS-232
M = Power supply
N = Grounding bolt
O = Switch

3 Continuous Mode

3.1 Material Speed

Please note that the material has sufficient adhesion at the pressure transducer roll or encoder roll to permit the exact speed by the encoder.

It is only possible to print when respecting the operating conditions, i.e. the speed has to be observed.

3.2 Print Principle

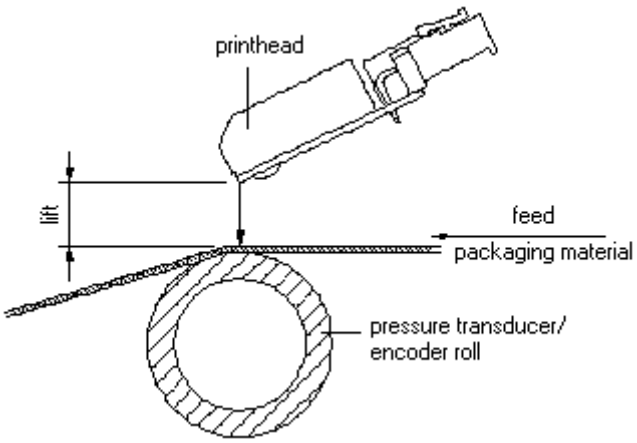


Figure 3

After starting a print order the printhead moves against the print medium. The feed of material is registered by the encoder and then evaluated. The printhead is in start position as long as the printing onto the moving material is finished and then it moves back to its home position.

3.3 Material Guiding

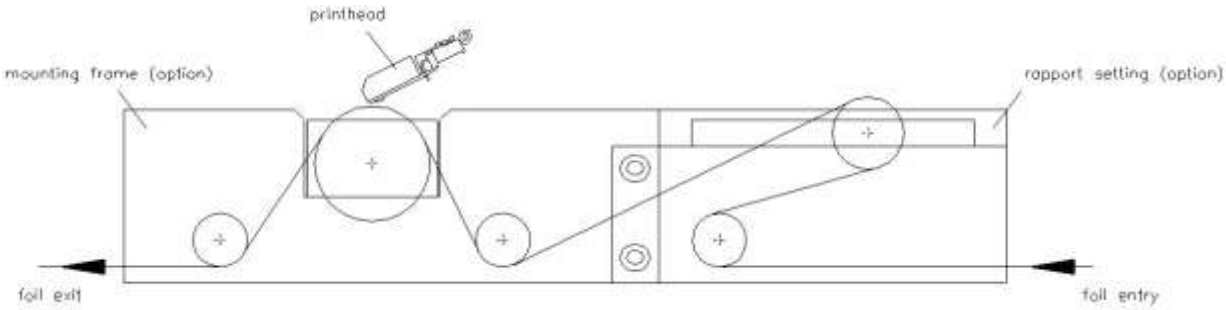


Figure 4

NOTICE!
In case the encoder is connected to the counter-pressure roll or the encoder roll you have to observe that the material has sufficient adhesion at the pressure roll or encoder roll to guarantee an exact speed by the encoder.

4 Intermittent Mode

4.1 Print Principle

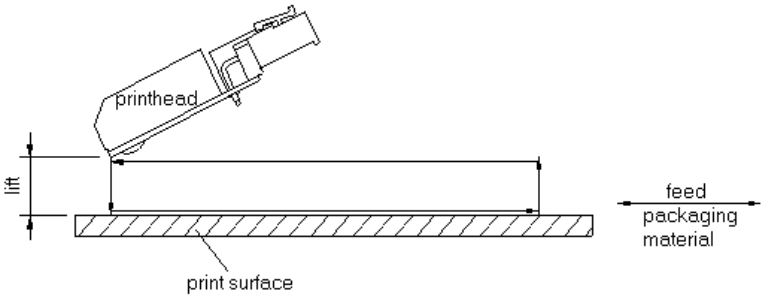


Figure 5

After starting a print order the printhead moves against the print medium. Afterwards the printing carriage moves corresponding to the set or transferred layout length linear over the material which is to be printed. After the print procedure the printhead again lifts up and the printing carriage moves again to the starting position.

4.2 Print Position

NOTICE!

The direct print module is delivered with a default print length of 65 mm. In order to use the maximum print length of 75 mm, the print position value must be changed to 93 (see chapter 10.4 Machine Parameters (Intermittent Mode), page 62).

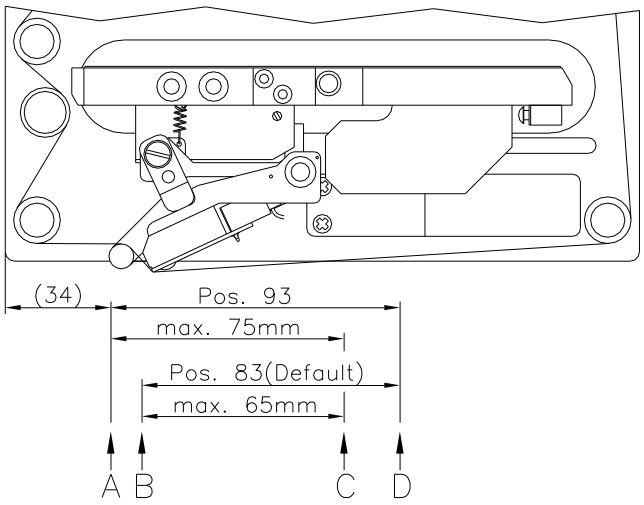


Figure 6

A: Print pos. / Start pos. value = 93
B: Print pos. / Start pos. value = 83
C: Max. position print end
D: Stand-by position

5 Operating Conditions

Before initial operation and during operation these operating conditions have to be observed to guarantee save and interference-free service of our direct print modules.

Therefore please carefully read these operating conditions.

Shipment and storage of our direct print modules are **only** allowed in original packing.

Installation and initial operation of direct print modules is only allowed if operating conditions were **fulfilled**.

Initial operation, programming, operation, cleaning and service of our direct print modules are only recommended after careful study of our manuals.

Operation of direct print modules is only allowed by especially trained persons.

NOTICE!

Perform trainings regularly.
Content of the training are chapter 5 (Operating Conditions), chapter 8 (Load Transfer Ribbon Cassette) and chapter 12 (Maintenance and Cleaning).

These indications are also valid for someone else's equipment supplied by us.

Only use original spare and exchange parts.

Please contact the manufacturer with respect to spare/wear parts.

Conditions for installation place

The installation place of direct print module should be even, free of vibration and currents of air are to be avoided.

The direct print modules have to be installed to ensure optimal operation and servicing.

Installation of power supply

The installation of the power supply to connect our direct print modules has to be effected according to the international rules and regulations, especially the recommendations of one of the three following commissions:

- International Electronic Commission (IEC)
- European Committee for Electro technical Standardisation (CENELEC)
- Verband Deutscher Elektrotechniker (VDE)

Our direct print modules are constructed according to VDE and have to be connected to a grounded conductor. The power supply has to be equipped with a grounded conductor to eliminate internal interfering voltage.

Technical data of power supply

Power line voltage and power line frequency: See type plate

Allowable tolerance of power line voltage:
+6 % … −10 % of nominal value

Allowable tolerance of power line frequency:
+2 % … −2 % of nominal value

Allowable distortion factor of power line voltage: ≤ 5 %

Anti-interference measures

In case your net is infected (e.g. by using thyristor controlled machines) anti-interference measures have to be taken. Please use one of the following possibilities:

- Provide separate power supply to our direct print modules.
- In case of problems please connect capacity-decoupled isolation transformer or similar interference suppressor in front of our direct print modules.

Connecting lines to external machines

All connecting lines have to be guided in shielded lines. Shielding has to be connected on both sides to the corner shell.

It is not allowed to guide lines parallel to power lines. If a parallel guiding cannot be avoided a distance of at least 0.5 m has to be observed.

Temperature of lines between: −15 … +80 °C.

It is only allowed to connect devices which fulfil the request 'Safety Extra Low Voltage' (SELV). These are generally devices which are checked corresponding to EN 62368-1.

Installation of data lines

The data cables must be completely protected and provide with metal or metallised connector housings. Shielded cables and connectors are necessary, in order to avoid radiant emittance and receipt of electrical disturbances.

Allowable lines

Shielded line:

4 x 2 x 0,14 mm² (4 x 2 x AWG 26)
6 x 2 x 0,14 mm² (6 x 2 x AWG 26)
12 x 2 x 0,14 mm² (12 x 2 x AWG 26)

Sending and receiving lines have to be twisted in pairs.

Maximum cable length:

interface V 24 (RS-232C) - 3 m (with shielding)
USB - 3 m
Ethernet - 100 m

Air convection

To avoid inadmissible heating, free air convection has to be ensured.

Limit values

Protection according IP: 65

Ambient temperature °C (operation): Min. +5 Max. +40

Ambient temperature °C (transport, storage): Min. −25 Max. +60

Relative air humidity % (operation): Max. 80

Relative air humidity % (transport, storage): Max. 80
(bedewing of direct print modules not allowed)

Guarantee

We do not take any responsibility for damage caused by:

- Ignoring our operating conditions and operating manual.
- Incorrect electric installation of environment.
- Building alterations of our direct print modules.
- Incorrect programming and operation.
- Not performed data protection.
- Using of not original spare parts and accessories.
- Natural wear and tear.

When (re)installing or programming our direct print modules please control the new settings by test running and test printing. Herewith you avoid faulty results, reports and evaluation.

Only specially trained staff is allowed to operate the direct print modules.

Control the correct handling of our products and repeat training.

We do not guarantee that all features described in this manual exist in all models. Caused by our efforts to continue further development and improvement, technical data might change without notice.

By further developments or regulations of the country illustrations and examples shown in the manual can be different from the delivered model.

Please pay attention to the information about admissible print media and the notes to the direct print module maintenance, in order to avoid damages or premature wear.

We endeavoured to write this manual in an understandable form to give and you as much as possible information. If you have any queries or if you discover errors, please inform us to give us the possibility to correct and improve our manual.

6 Technical Data

	Dynacode II IP53	**Dynacode II IP107**	**Dynacode II IP128**
Resolution	300 dpi	300 dpi	300 dpi
Print speed Continuous mode Intermittent mode	 50 … 800 mm/s 50 … 600 mm/s	 50 … 600 mm/s 50 … 600 mm/s	 50 … 450 mm/s 50 … 600 mm/s
Back speed	intermittent mode only: max 600 mm/s		
Print width	53.3 mm	106.6 mm	128 mm
Print length Continuous mode Intermittent mode	 6000 mm 75 mm	 3000 mm 75 mm	 3000 mm 75 mm
Frame passage width	customized		
Printhead	Corner Type	Corner Type	Corner Type
Acoustic Emission (measuring distance 1 m)			
Average sound power level	60 dB(A)	65 dB(A)	68 dB(A)
Transf Ribbon			
Ink	outside / inside (option)		
Max. roll diameter	98 mm	82 mm	75 mm
Core diameter	25.4 mm / 1"	25.4 mm / 1"	25.4 mm / 1"
Max. length	900 m	600 m	450 m
Max. width	55 mm	110 mm	130 mm
Dimensions in mm (width x height x depth)			
Print mechanics w/o mounting frame with mounting frame	 204 x 182 x 235 depends on passage width	 204 x 182 x 290	 204 x 182 x 310
Control unit	314 x 230 x 100 – w/o protective cover, w/o connecting cables 314 x 350 x 100 – with protective corer, w/o connecting cables		
Weight			
Print mechanics	9,5 kg	11 kg	11,7 kg
Electronics (incl. cable)	7 kg – with protective cover, w/o connecting cables		
Electronics			
Processor	High Speed 32 Bit		
RAM	16 MB		
Slot	Compact Flash card type I (inside of control unit)		
Battery cache	for Real-Time clock (storage of data with shut-down)		
Warning signal	acoustic signal when error		
Interfaces			
Serial	RS-232C (bis 115.200 Baud)		
USB	2.0 High Speed Slave		
Ethernet	10/100 Base T, LPD, RawIP-Printing, DHCP, HTTP, FTP		
2 x USB Master	connection for external USB keyboard and memory stick		
Connection Values			
Pneumatic connection	6 bar dry and free of oil		
Air consumption typical* * hub 1,5 mm 150 cycle/min 6 bar operating pressure	150 ml/min	300 ml/min	300 ml/min
Nominal voltage	110 … 230 V AC / 50 … 60 Hz		
Nominal current	230 V AC / 1.5 A − 110 V AC / 3 A		
Fuse values	2x T4A 250 V		

Operation Data	
Ingress Protection Rating	IP 65
Temperature	5 … 40 °C
Humidity	max 80 % (non-condensing)
Operation Panel	
Touchscreen display	Colour display: 800 x 480 pixel, screen size 7"
Operating functions	favorites, function menu, memory card, print start, test print, feed, about menu
Settings	
	date, time, shift times 11 language settings (others on demand) print and device parameters, interfaces, password protection
Monitoring	
Stop printing if	end of ribbon / end of layout
Status report	extensive status print with information about settings e.g. print length counter, runtime counter, photocell interface and network parameters printout of all internal fonts and all supported bar codes
Fonts	
Font types	6 Bitmap fonts, 8 Vector fonts/TrueType fonts, 6 proportional fonts other fonts on demand
Character sets	Windows 1250 up to1257, DOS 437, 850, 852, 857 all West and East European Latin, Cyrillic, Greek and Arabic (option) characters are supported other character sets on demand
Bitmap fonts	size in width and height 0,8 … 5,6 zoom 2 … 9, orientation 0°, 90°, 180°, 270°
Vektor fonts/ TrueType fonts	size in width and height 1 … 99 mm variable zoom orientation 0°, 90°, 180°, 270°
Font attributes	depending on character font - bold, Italic, inverse, vertical
Font width	variable
Bar Codes	
1D bar codes	CODABAR, Code 128, Code 2/5 interleaved, Code 39, Code 39 extended, Code 93, EAN 13, EAN 8, EAN ADD ON, GS1-128, Identcode, ITF 14, Leitcode, Pharmacode, PZN 7 Code, PZN 8 Code, UPC-A, UPC-E
2D bar codes	Aztec Code, CODABLOCK F, DataMatrix, GS1 DataMatrix, MAXICODE, PDF 417, QR Code
Composite bar codes	GS1 DataBar Expanded, GS1 DataBar Limited, GS1 DataBar Omnidirectional, GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional, GS1 DataBar Truncated
	all bar codes are variable in height, module width and ratio. orientation 0°, 90 °, 180°, 270°. Optionally with check digit and human readable line.
Software	
Configuration	ConfigTool
Process control	NiceLabel
Design software	Labelstar Office Lite, Labelstar Office
Windows printer driver	Windows 7® 32/64 Bit, Windows 8® 32/64 Bit Windows 8.1® 32/64 Bit, Windows 10® 32/64 Bit, Windows Server 2008® (R2) 64 Bit Windows Server 2012® 64 Bit, Windows Server 2012® (R2) 64 Bit

Technical details are subject to change.

6.1 Control Inputs and Control Outputs

By means of a maximum of 16 control inputs and outputs which, in the following, are also referred to as ports, different functions of the printer system can be triggered and operating states can be displayed.

The ports are provided by means of a D-Sub bushing (26pin HD) at the rear panel of the printer system and are galvanically isolated from protective earth (PE) by means of an optocoupler semi-conductor route.

Each port can be configured as input and as output. This function however, is predefined in the printer software and cannot be changed by the user.
The following parameters can be changed and set by using the menu: debounce times and high or low active.

Printer internal circuit

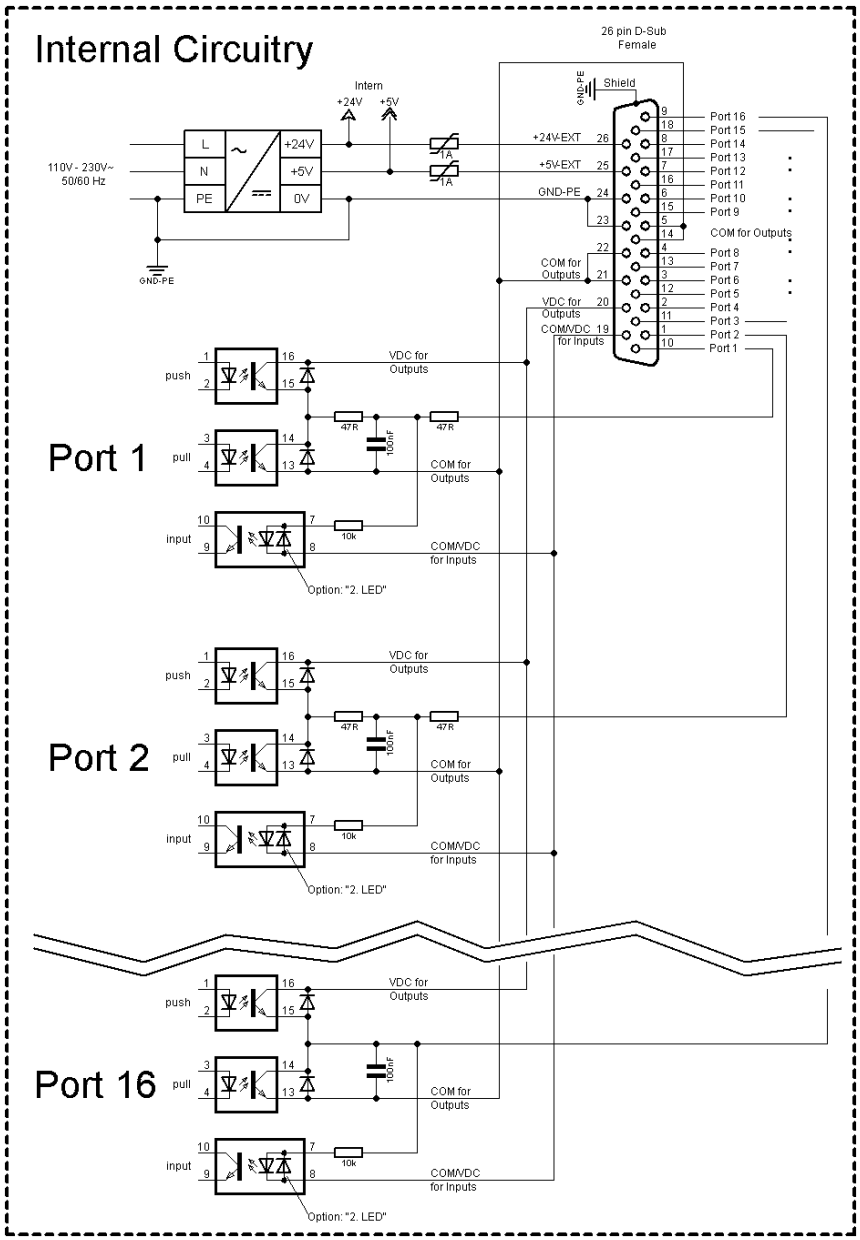


Figure 7

Configuration of D-Sub socket

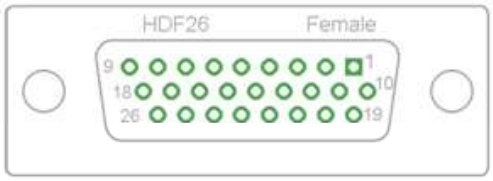


Figure 8

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

Port 1 to Port 16 = Assignment for I/O Profile *Std_Direct*

Port	Pin	Description / Function
1 (Input)	10	Print start
2 (Input)	1	No function
3 (Input)	11	Counter reset
4 (Input)	2	No function
5 (Input)	12	Error reset
6 (Input)	3	No function
7 (Input)	13	No function
8 (Input)	4	No function
9 (Output)	15	Error
10 (Output)	6	No function
11 (Output)	16	No function
12 (Output)	7	Printing
13 (Output)	17	Ready
14 (Output)	8	No function
15 (Output)	18	Return printing carriage
16 (Output)	9	Transfer ribbon prior warning
COM/VDC for Inputs	19	Common reference potential of all control inputs. 'COM/VDC for Inputs' is usually connected with the (-) terminal of the control voltage and the control inputs are switched to active (+). By means of the option '2nd LED', 'COM/VDC for Inputs' can optionally be connected with the (+) terminal of the control voltage. Then, the control inputs are switched to active (-).
VDC for Outputs	20	Common supply connection of all control outputs. 'VDC for Outputs' must be connected with the (+) terminal of the control voltage. Never leave 'VDC for Outputs' open even if no output is used.
COM for Outputs	5,14 21,22	Common reference potential of all control outputs. 'COM for Outputs' must be connected with the (-) terminal of the control voltage. Never leave 'COM for Outputs' open even if no output is used.
GND-PE	23,24	'GND-PE' is the reference potential of the '+5 VDC EXT' and '+24 VDC EXT' voltages provided by the printer system. 'GND-PE' is printer internally connected with protective earth (PE).

Port	Pin	Description / Function
+ 5 VDC EXT	25	5 Volt DC output for external use. Max. 1 A. This voltage is provided from direct print module and can be used e.g. as control voltage. Never apply any external voltage to this output.
+ 24 VDC EXT	26	24 Volt DC output for external use. Max. 1 A. This voltage is provided from direct print module and can be used e.g. as control voltage. Never apply any external voltage to this output.

Technical data

Port 1 to Port 16 = Assignment for I/O Profile *Std_Direct*

Port	Pin	Description / Function
1 (Input)	10	Print start
2 (Input)	1	No function
3 (Input)	11	Counter reset
4 (Input)	2	No function
5 (Input)	12	Error reset
6 (Input)	3	No function
7 (Input)	13	No function
8 (Input)	4	No function
9 (Output)	15	Error
10 (Output)	6	No function
11 (Output)	16	No function
12 (Output)	7	Printing
13 (Output)	17	Print-Ready
14 (Output)	8	No function
15 (Output)	18	Return
16 (Output)	9	Transfer ribbon prior warning

Port 1 to Port 16 = Assignment for I/O Profile *StdFileSelDirect*

Port	Pin	Description / Function
1 (Input)	10	Print start
2 (Input)	1	Error reset
3 (Input)	11	Number of the file to load Bit 0 (Input)
4 (Input)	2	Number of the file to load Bit 1 (Input)
5 (Input)	12	Number of the file to load Bit 2 (Input)
6 (Input)	3	Number of the file to load Bit 3 (Input)
7 (Input)	13	Number of the file to load Bit 4 (Input)
8 (Input)	4	Number of the file to load Bit 5 (Input)
9 (Output)	15	Error
10 (Output)	6	No function
11 (Output)	16	No function
12 (Output)	7	No function
13 (Output)	17	Ready
14 (Output)	8	No function
15 (Output)	18	Return printing carriage
16 (Output)	9	Transfer ribbon prior warning

* The files must be saved onto the CF card in the user directory.

The files must start with 1 or 2 digits (1_Etikett.prn, 02_Etikett.prn).

The files can be saved with a file extension.

In the printer status 'ready', 'waiting' or 'stop', a new file can be loaded. The printer order will be started after charging and an already existing printer order will be deleted.

The input signal 000000 does not charge a file and does not delete an already existing print order.

Port 1 to Port 16 = Assignment for I/O Profile *SP_Direct0*

Port	Pin	Description / Function
1 (Input)	10	Print start
2 (Input)	1	No function
3 (Input)	11	Counter reset
4 (Input)	2	No function
5 (Input)	12	Error reset
6 (Input)	3	No function
7 (Input)	13	No function
8 (Input)	4	No function
9 (Output)	15	Error
10 (Output)	6	Active print order
11 (Output)	16	No function
12 (Output)	7	Printing
13 (Output)	17	Ready
14 (Output)	8	No function
15 (Output)	18	Return
16 (Output)	9	Transfer ribbon prior warning

Port 1 to Port 16 = Assignment for I/O Profile *Old_Direct0*

Port	Pin	Description / Function
1 (Input)	10	Print start
2 (Input)	1	Error reset
3 (Input)	11	Counter reset
4 (Input)	2	No function
5 (Input)	12	No function
6 (Input)	3	No function
7 (Input)	13	No function
8 (Input)	4	No function
9 (Output)	15	Error
10 (Output)	6	Active print order
11 (Output)	16	Generation
12 (Output)	7	Printing
13 (Output)	17	Print-Ready
14 (Output)	8	Printhead down
15 (Output)	18	Return
16 (Output)	9	Transfer ribbon prior warning

Technical data

Plug Connector	
Type	D-Sub connector High Density 26-pin. / connector
Manufacturer	W+P-Products
Reference number	110-26-2-1-20
Output Voltages (connected with GND-PE)	
+ 24 V / 1 A	Fuse: Polyswitch / 30 V / 1 A
+ 5 V / 1 A	Fuse: Polyswitch / 30 V / 1 A
Port 1 - 15	
Input	
Tension	5 VDC … 24 VDC
Impedance	47Ω + (100nF || 10 kΩ)
Output	
Tension	5 VDC … 24 VDC
Impedance	47Ω + (100nF || 10 kΩ || 47Ω)
Current max.	High +15 mA Low -15 mA
Port 16	
Input	
Tension	5 VDC … 24 VDC
Impedance	100nF || 10 kΩ
Output	
Tension	5 VDC … 24 VDC
Impedance	100nF || 10 kΩ
Current max.	High +500 mA (Darlington BCP56-16) Low - 500 mA (Darlington BCP56-16)
Optocoupler	
Output	TCMT4106, CTR 100 % - 300 %, Vishay or TLP281-4(GB), CTR 100 % - 600 %, Toshiba
Input	TCMT4106, CTR 100 % - 300 %, Vishay or TLP281-4(GB), CTR 100 % - 600 %, Toshiba
Input Option 2nd LED	TCMT4600, CTR 80 % - 300 %, Vishay or TLP280-4, CTR 33 % - 300 %, Toshiba

Example 1 Device connection to a machine with S7-300 SPS.

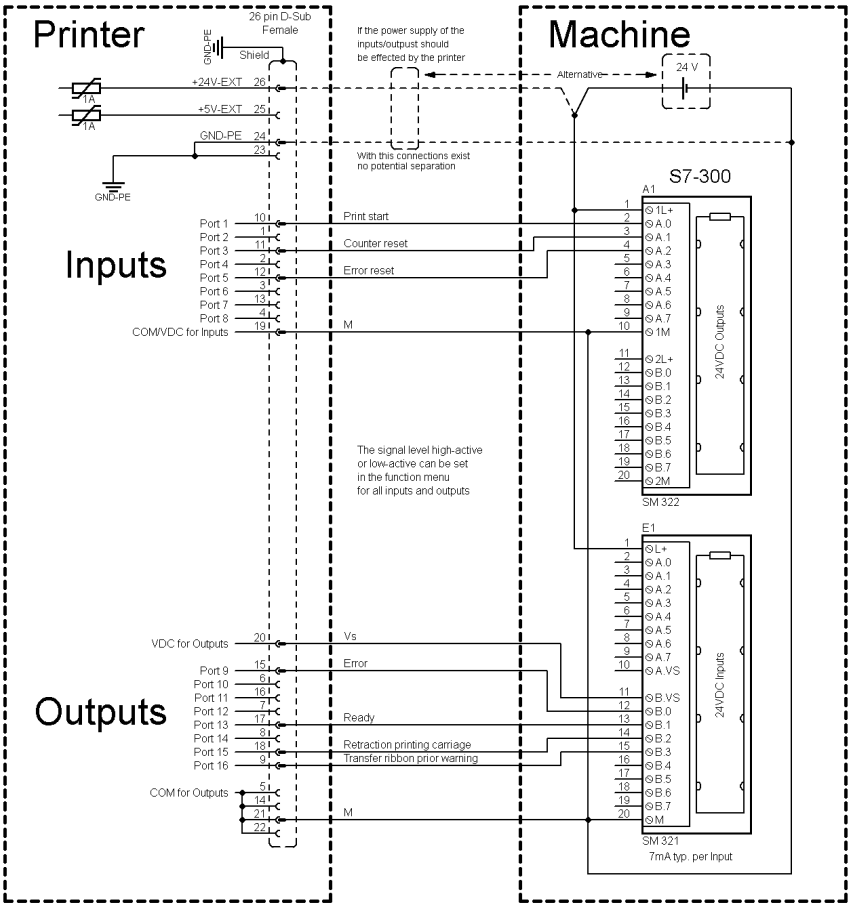


Figure 9

Example 2 Device connection to a operating panel.

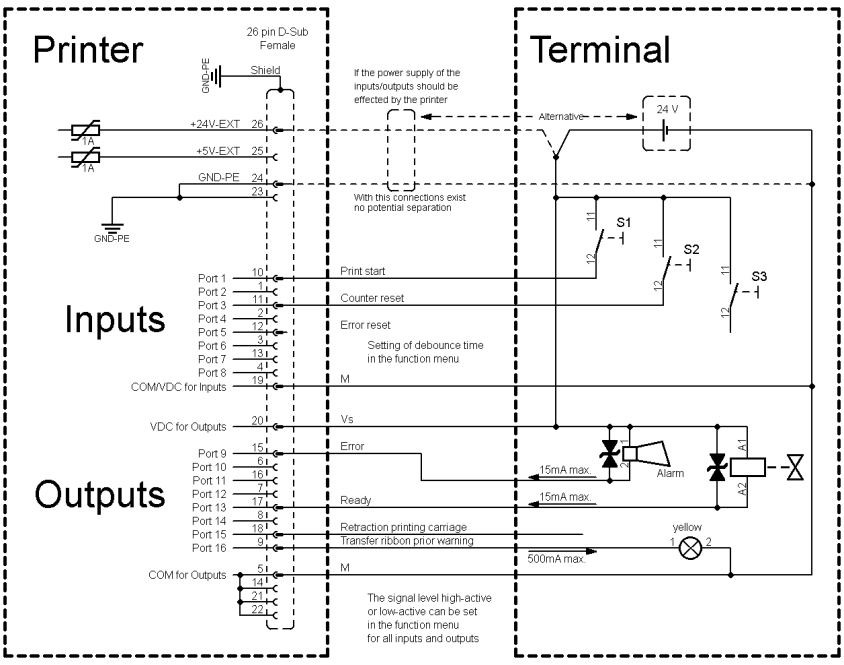


Figure 10

Example 3

Device connection version if 'Option: 2. LED'.

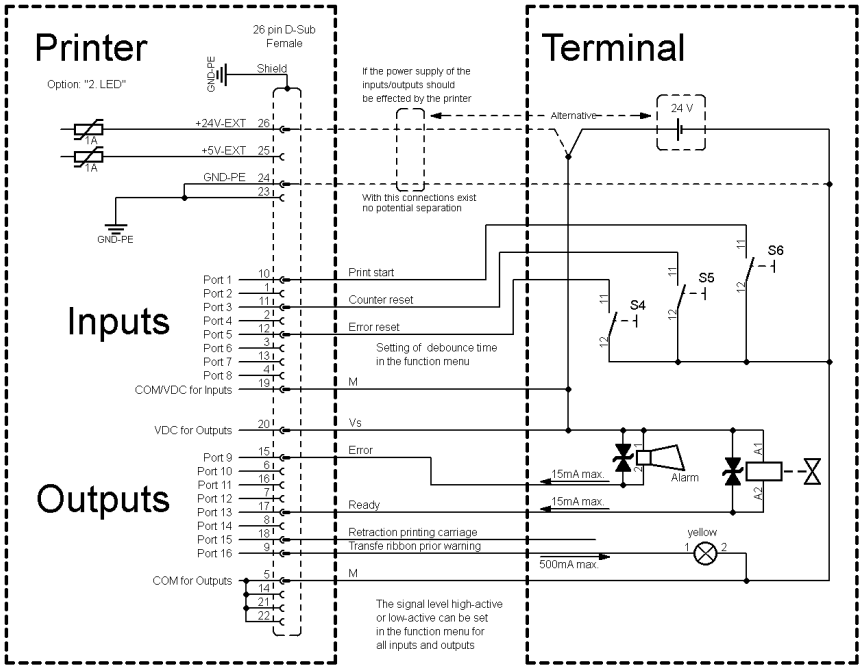


Figure 11

Precautions

When connecting a reed contact with a control input, the contact must have a switching capacity of min. 1 A in order to prevent the contact from sticking due to the inrush current. As an alternative, a suitable resistor can be connected in series.

If one of the printer's internal voltages '+5 VDC EXT' or '+24 VDC EXT' is used, an external fuse e.g. 0.5 AF, should be additionally installed to protect the printer electronics.

In the event of an inductive load, an antiparallel connected diode, for instance, must be used to discharge the induction energy.

In order to minimize the influence of leakage currents at control outputs, a resistor must, depending on what is connected, be installed in parallel with the load.

In order to avoid any damages to the printing system, the max. output currents must not be exceeded or outputs shorted.

7 Installation and Initial Operation

Unpack/pack the direct print module

CAUTION!

Danger of injury by imprudent handling when lifting or placing the printing system. Risk of crushing by unexpected linear movement of the printing carriage.

⇒ Do not underestimate the weight of the printing system (9 … 16 kg).

⇒ Do not lift the printing system at the hood.

⇒ Protect the printing system against uncontrolled movement.

⇒ Check the direct print module for transport damages.

⇒ Remove the foam transportation safeguards near the printhead.

⇒ Check delivery for completeness.

Scope of delivery

- Print mechanics.
- Control unit with cable.
- Cleaning cassette.
- Connecting cable.
- Mini controller.
- Manometer.
- Pneumatic tube.
- Push-on connector.
- I/O accessories (mating connector for I/Os).
- Protective cover for control unit IP 65.
- 1 transfer ribbon roll.
- Empty core, mounted on transfer ribbon rewinder.
- Cleaning foil for printhead.
- Documentation.
- CD with printer drivers.

NOTICE!

Retain the original packaging for subsequent transport.

7.1 Install the Print Mechanics at Machines

NOTICE!

With the open printing unit (due to construction) the requirements of EN 62368-1 regarding fire protection casing are not fulfilled. These must be ensured by the installation into the end device.

Installation with mounting frame

At the bottom of the mounting frame are two M8 threads that can be used for the attachment at the machine. Additionally multi-functional connecting parts are supplied.

Please observe the following conditions:

- The maximum thread engagement of the M8 threads is 10 mm.
- The print mechanics has to be installed with a distance from printhead to brake stator of 2 … 3 mm (see illustration).

  NOTICE!

  A distance of 2 mm is recommended.
  A smaller distance is not possible due to the sealing strip at the bottom of the print mechanics, otherwise the counter-pressure plate or pressure roller can touch the print mechanics
- The best print results can be received if the silicon of the pressure roll consists of a hardness of approx. 40° … 50 ° Shore A and/or the elastometer of the counter-pressure plate shows a hardness of approx. 60 ± 5 Shore A (average value of roughness Ra ≥ 3,2 mm).
- The pressure roll/counter-pressure plate has to be installed parallel to the linear movement of print unit and the focal line of printhead. Discrepancies to the focal line and cavities in the print surface can lead to an inferior print quality at these positions.

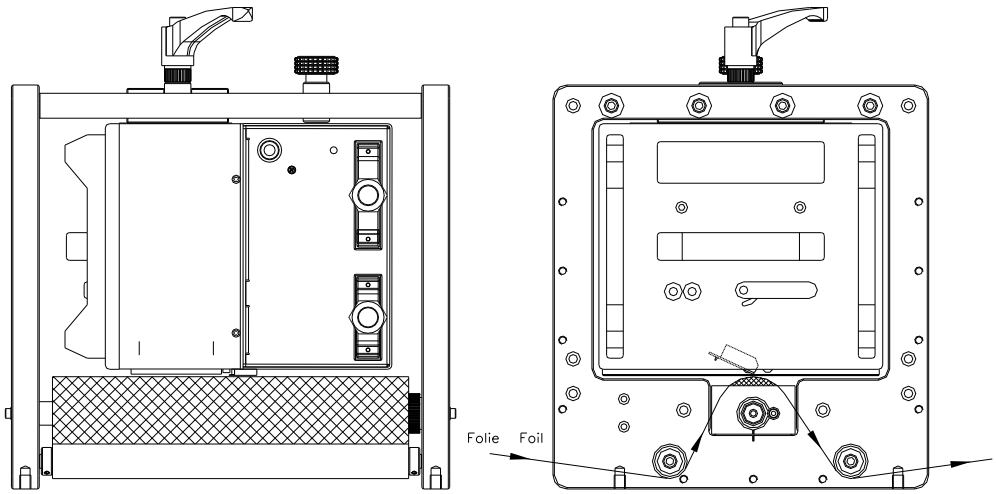


Figure 12

Installation without mounting frame

In case the machine is used without mounting frame, then the print module is to be fixed from the top with four M6 screws.

The maximum thread engagement of the M6 threads is 6 mm. (position of printhead see illustration)

7.2 Required Space for Cable Outgoing

Standard:
Cable outgoing sideways

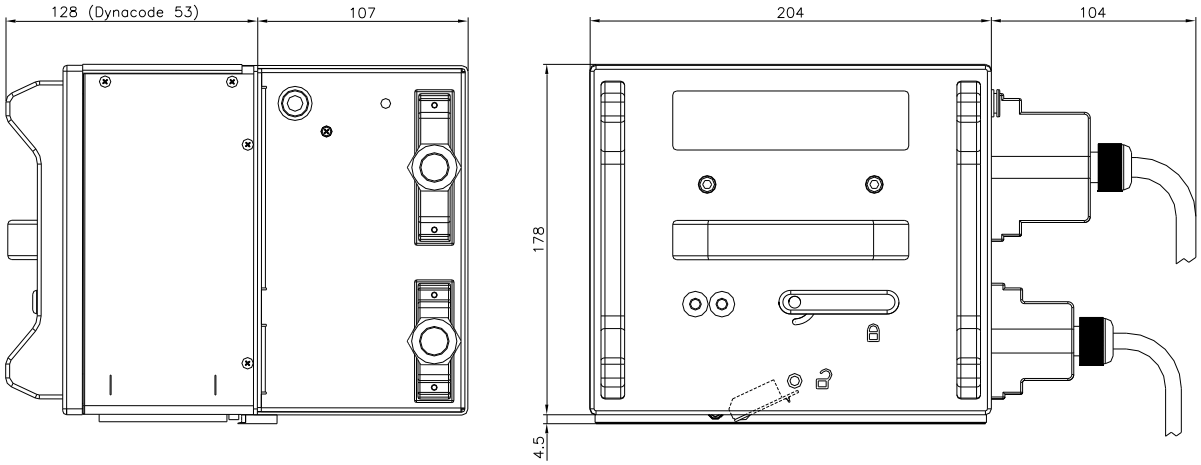


Figure 13

Option:
Cable outgoing behind

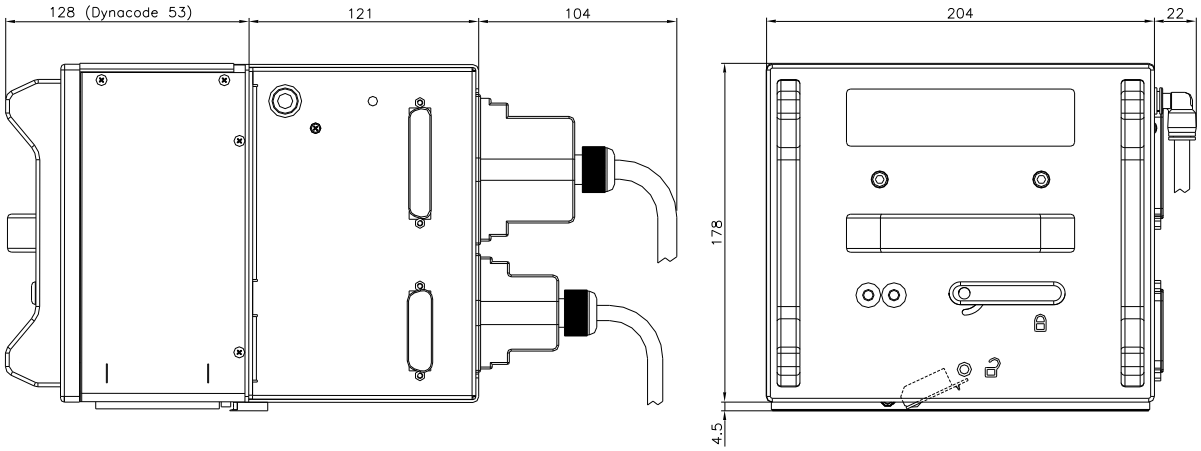


Figure 14

7.3 Connect the Pneumatic Power Supply

The pneumatic power supply for the printhead mechanics has to be made available a minimum continuous pressure of 4 … 6 bars in front of the pressure regulator. The maximum pressure in front of the pressure regulator is 7 bars and 4 bars after the pressure regulator.

NOTICE!

A pneumatic power supply of 4 bars is recommended.

The compressed-air has to be dry and oil free.

The supplied pressure regulator with manometer is to connect with a pneumatic tube Ø 8 mm via a plugging bolting to the pneumatic power supply. It is necessary to make a connection between the pressure regulator and the print mechanics via a pneumatic tube Ø 8 mm.

Please observe the following notes:

1. Position the pressure regulator as near as possible to the print mechanics.
2. The pressure regulator is only to operate in the direction that is indicated on its underside. The direction shows the way of the streaming air.
3. It is not allowed to bend the pneumatic tubes.
4. Shortening of the pneumatic tubes has to be made with a clean right-angled cut without squashing the tube. If necessary use special tools (available in pneumatic requirements).
5. Please observe a possible short length of the 8 mm pneumatic tubes.

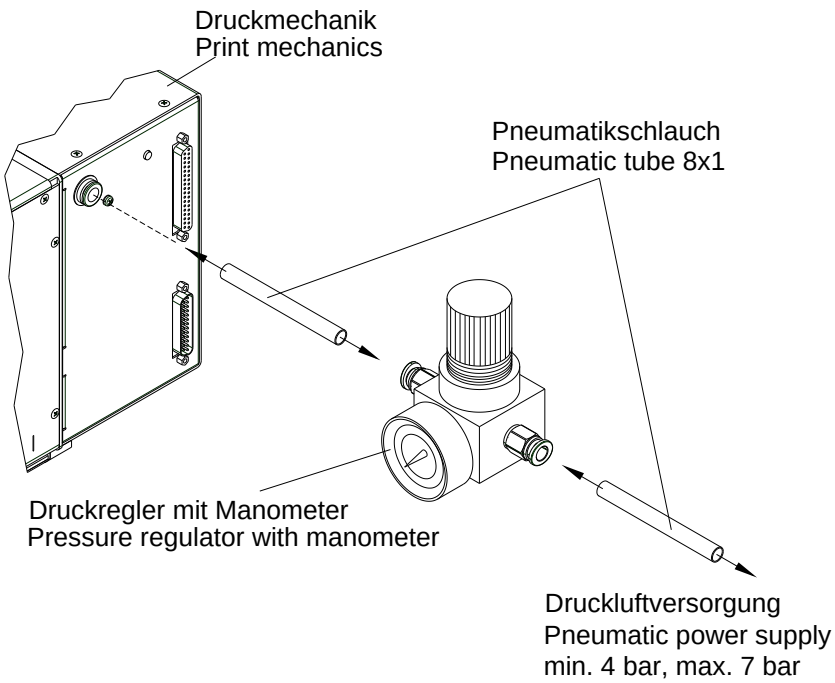


Figure 15

7.4 Install the protective cover for control unit IP65

NOTICE!

By mounting the optional protective cover, the protection class IP 65 according to DIN EN 60529 is achieved.

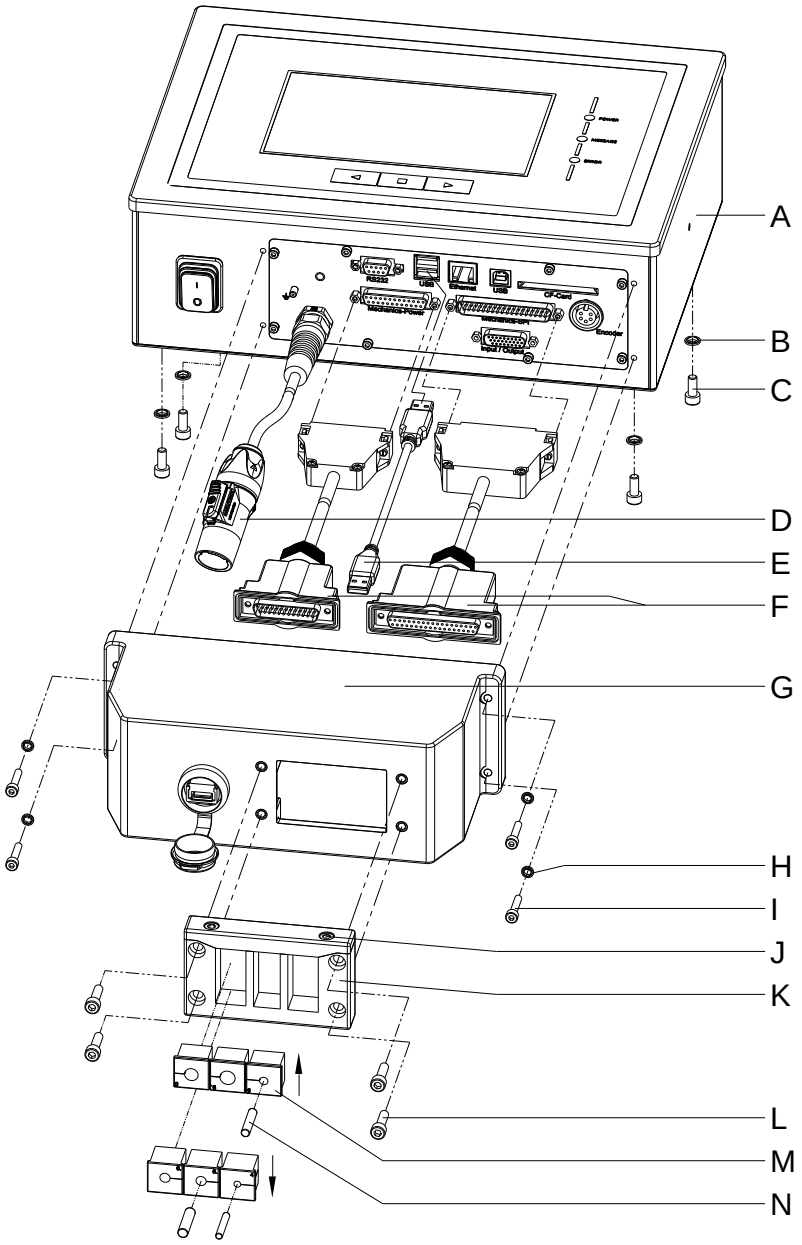


Figure 16

1. Successively remove the four screws (C) on the back on the control unit (A), slide on the sealing rings (B) and screw in the screws (C) again.
2. Guide the connection cable print mechanics/control unit (F) with the non-sealed side from the outside through the protective cover (G).
3. Connect the connection cable print mechanics/control unit (F) to the control unit (A).
4. If necessary, connect a connection cable for external inputs/outputs to the appropriate socket of the control unit (A).
5. If necessary, connect an Ethernet or USB data cable to the control unit (A).
6. Insert the USB data cable (E) on the inside of the protective cover (E) into the USB socket.
7. Guide the power cable (D) and if necessary, the data and I/O cable through the opening of the protective cover (G).
8. Guide the protective cover (G) in the direction of the control unit (A) until the USB data cable (E) can be connected to the control unit (A).
9. Screw the protective cover (G) to the control unit (A) with the four screws (I) and the sealing rings (H).
10. Remove the upper part of the cable entry strip (K) after removing the both screws (J).
11. Remove the cable grommets (M) that fit to the respective connection cables from the cable entry strip (K) and enclose the cables two to three centimeters in front of the protective cover (G).
12. Place the cable entry strip (K) in front of the protective cover and insert the cable grommets (M) with connection cables into the slots. The connection cables print mechanics/control unit (F) must be placed in the upper left corner and the power cable (D) should be placed on the bottom left (see Figure 17).

    NOTICE!

    The side of the cable entry strip (K) with the seal injected must point in the direction of the protective cover (G).

    The smooth, even sides of the grommets (M) must face each other in the middle of the entry strip.

    Unnecessary cable grommets (M) must be closed with the enclosed suitable plugs (N).
13. Fix the upper part of the cable entry strip (K) with the screws (J), so that the connecting cables are still movable.
14. Fix the cable entry strip (K) to the protective cover (G) with the screws (L).
15. Screw tight the upper part of the cable entry strip (K).

NOTICE!

Check that all cables are safely enclosed by the grommets (M) so that no water or dust can enter. Too large grommets and loose cables lead to entering of impurities into the case.

Suitable cable grommets in different sizes are available ex works. The size (diameter) is indicated on the respective grommet.

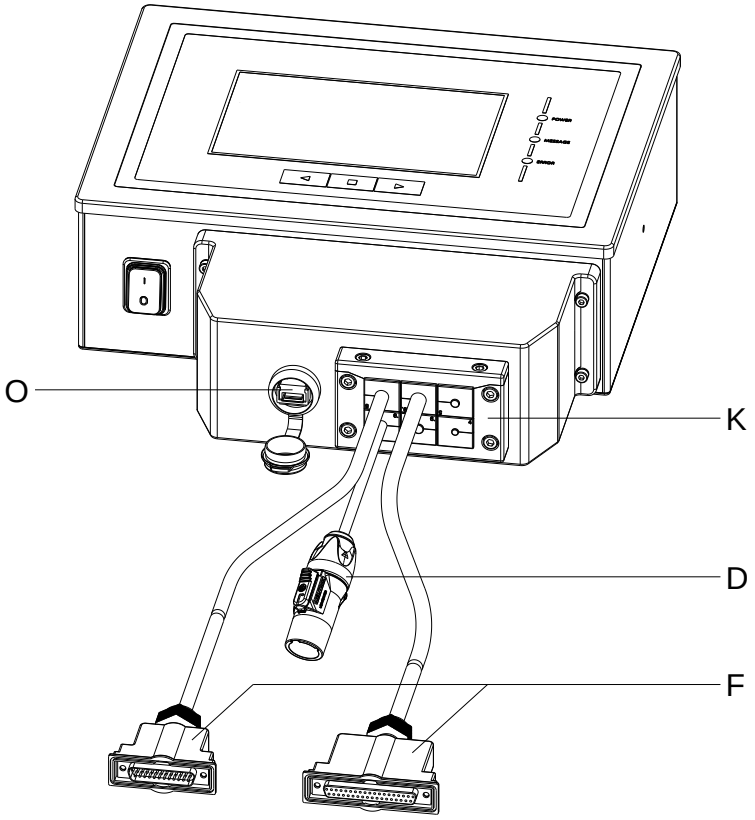


Figure 17

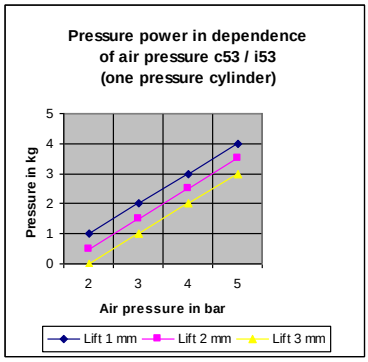
For loading of print data, the integrated USB interface (O) is accessible from the outside.

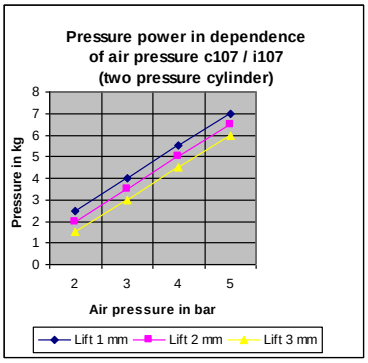
NOTICE!

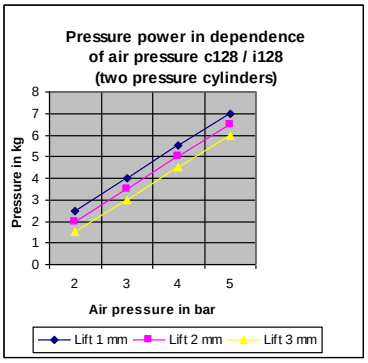
The protection class IP 65 is only achieved if the cap of the interface is firmly closed, i.e. no USB stick or data cable is inserted.

Do not bend the connection cable (D, F and others) directly at the cable entry strip (K).

7.5 Adjust the Pressure Power







The pressure power of the printhead can be set with the pressure regulator. The values are indicated in the following table:

NOTICE!

If the pressure power is set too low then the printhead has no more contact to the counter-pressure plate. This damages the printhead due to the missing heat dissipation during the printout. In case of too low pressure an error message appears. This error message is to protect the printhead for overheating only and is not to use as print quality control (the control suffers with too low pressure, too).

The *Lift* indicates the distance between the printhead and counter-pressure plate in idle mode of the device.

	DC II IP 53	DC II IP 107	DC II IP 128
Recommended pressure power:	40 N	40 N	40 N
Max. pressure power:	45 N	45 N	45 N

As the mechanical wear and tear of the printhead increases with the pressure power, the pressure power should be as low as possible.

7.6 Connect the Direct Print Module

Connect to the power supply

The direct print module is equipped with a versatile power supply unit. The device may be operated with a mains voltage of 110 … 230 V AC 50 … 60 Hz without any adjustments or modifications.

CAUTION!

The direct print module can be damaged by undefined switch-on currents.

⇒ Set the power switch to '0' before plugging in the direct print module.

⇒ Insert the plug of power cable into a grounded electrical outlet.

Connect to a computer or to a computer network

NOTICE!

Insufficient or missing grounding can cause faults during operation.

Ensure that all computers and connection cables connected to the direct print module are grounded.

⇒ Connect the direct print module to a computer or network with a suitable cable.

7.7 Before Initial Operation

1. Mount the print mechanics.
2. Connect all cables between the print mechanics and control unit. Protect cables against unintentional unscrewing.
3. Install the compressed air connection.
4. Connect the control unit and PC by direct print module interface.
5. Connect the control unit and packaging machine by inputs and outputs.
6. Connect the power cable of control unit.

7.8 Print Control

As the direct print module is always in control mode, print orders can only be transmitted but not started via the existing interfaces (serial, parallel, USB or Ethernet). The print is started by a start signal to the ‘print start-control input’. So that the control unit detects when the start signal can be set, it is possible and mostly necessary to track the print status via the control outputs.

7.9 Initial Operation

⇒ After all connections are completed, switch on the control unit.

⇒ Insert the ribbon cassette (see chapter 8, page 43).
After loading the transfer ribbon cassette the measuring of transfer ribbon begins and the printhead is moved to the print position.

8 Load Transfer Ribbon Cassette

As for the electrostatic unloading the thin coating of the thermal printhead or other electronic parts can be damaged, the transfer ribbon should be antistatic.

The use of wrong materials can lead to direct print module malfunctions and the guarantee can expire.

NOTICE!

Before a new transfer ribbon roll is loaded, the printhead must be cleaned using the printhead and roller cleaner (97.20.002). For detailed information, please see page 104.
The handling instructions for the use of Isopropanol (IPA) must be observed. In the case of skin or eye contact, immediately wash off the fluid thoroughly with running water. If the irritation persists, consult a doctor. Ensure good ventilation.

8.1 Transfer Ribbon with Coating Outside

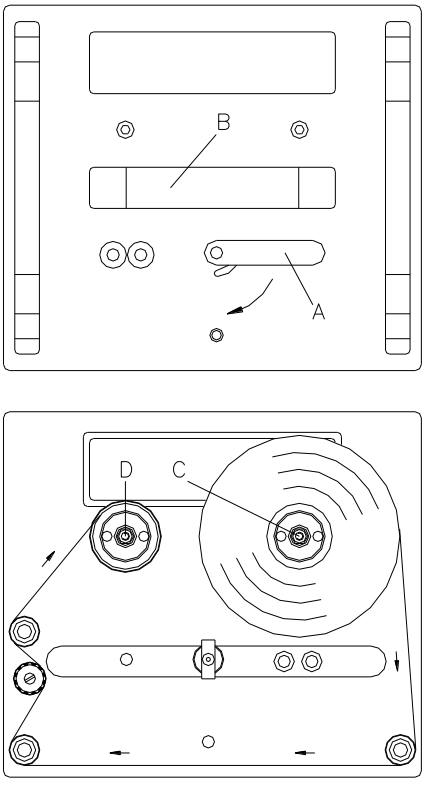


Figure 18

1. Turn the lever (A) 90° in clockwise direction.
2. Remove the ribbon cassette from the print mechanics by pulling handle (B).
3. Load a new ribbon roll as far as it will go onto the unwinding roll (C).
4. Load an empty cardboard roll as far as it will go onto the rewinding unit (D).
5. Insert the ribbon according to illustration.
6. Fix the ribbon with an adhesive tape at the empty roll and tighten it by some turns of the core.
7. Push the ribbon cassette again onto print mechanics and take care that the ribbon not rip.
8. Turn the lever (A) 90° anticlockwise.

NOTICE!

The above illustration shows a left-hand printing system. If you are using a right-hand system, then the new roll is to be inserted at the left and the cardboard core is to be inserted at the right side.

CAUTION!

Impact of static material on people!

⇒ Use antistatic transfer ribbon, because static discharge can occur when removing.

8.2 Transfer Ribbon with Coating Inside

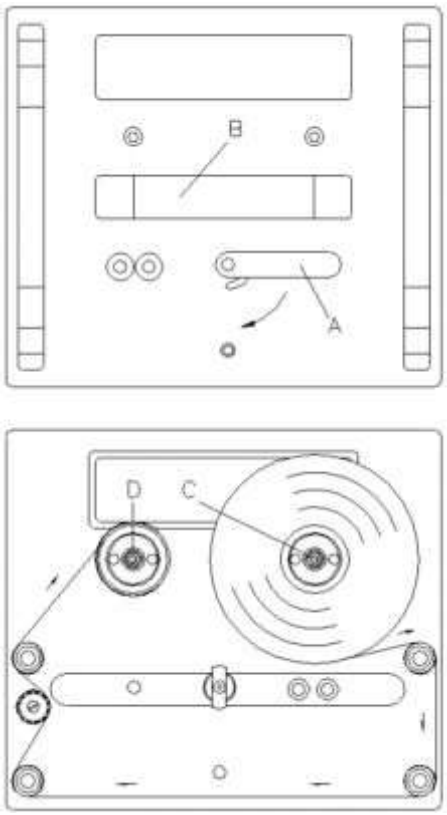


Figure 19

1. Turn the lever (A) 90° in clockwise direction.
2. Remove the ribbon cassette from the print mechanics by pulling handle (B).
3. Load a new ribbon roll as far as it will go onto the unwinding roll (C).
4. Load an empty cardboard roll as far as it will go onto the rewinding unit (D).
5. Insert the ribbon according to illustration.
6. Fix the ribbon with an adhesive tape at the empty roll and tighten it by some turns of the core.
7. Push the ribbon cassette again onto print mechanics and take care that the ribbon not rips.
8. Turn the lever (A) 90° anticlockwise.

NOTICE!

The above illustration shows a left-hand printing system. If you are using a right-hand system, then the new roll is to be inserted at the left and the cardboard core is to be inserted at the right side.

CAUTION!

Impact of static material on people!

⇒ Use antistatic transfer ribbon, because static discharge can occur when removing.

8.3 Increase the Clamping Force for Ribbon Roll

NOTICE!

The use of high-quality transfer ribbon with a cardboard core is recommended. A sample ribbon roll is included in the scope of delivery. The clamping force of transfer ribbon roll placed on the rewinding/unwinding unit is designed for this quality.

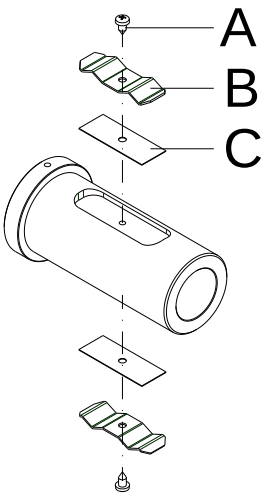


Figure 20

If other transfer ribbons are used, it can occur that the clamping force of the spring plates (B) is not sufficient, in order to position the rolls surely and to protect it against rotating.

When using transfer ribbons with plastic cores a safe positioning of the roles cannot be ensured.

CAUTION!

Slippage of transfer ribbon roll placed on the rewinding/ unwind unit or the empty cardboard core leads to malfunctions.

⇒ When using transfer ribbon rolls with plastic cores the groove must be shimmed.

Increase the clamping force

1. Remove the screws (A) and spring plates (B).
2. Insert the shims (C) into the groove. The shims are available from us (part number 52.57.110).
3. Fasten again the spring plates (B) and shims (C) with screws (A).
4. Insert the transfer ribbon roll and empty cardboard core on the rewinding/unwinding unit.
   Check firm position!

9 Water and Dust Protection Unit

After installing all of the necessary connections at the control unit and the covers of the not used connections with the appropriate accessories (contained in delivery) the control unit is protected from water and dust at each time in accordance to the degree of protection of enclosure IP65.

Owing to the conditions during the operation of direct print modules of this construction type the print mechanics cannot be protected at the time of printing completely from ingress of water.

However it is possibly by means of the special *Cleaning Cassette* (contained in delivery) to protect the print mechanics according to the degree of protection of enclosure IP65 during standstill times of machinery from ingress of water and dust.

9.1 Transfer Ribbon Cassette / Cleaning Cassette

Transfer ribbon cassette

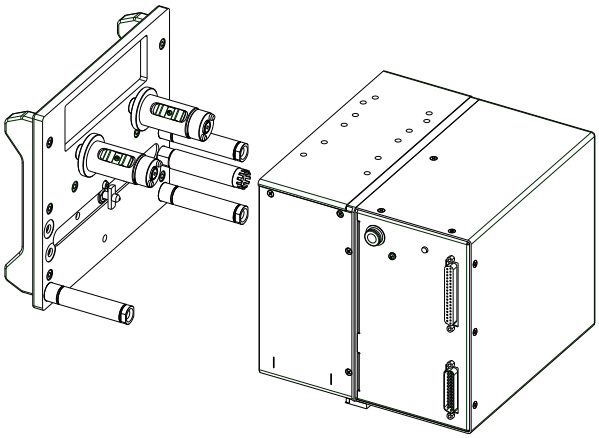


Figure 21

Cleaning cassette

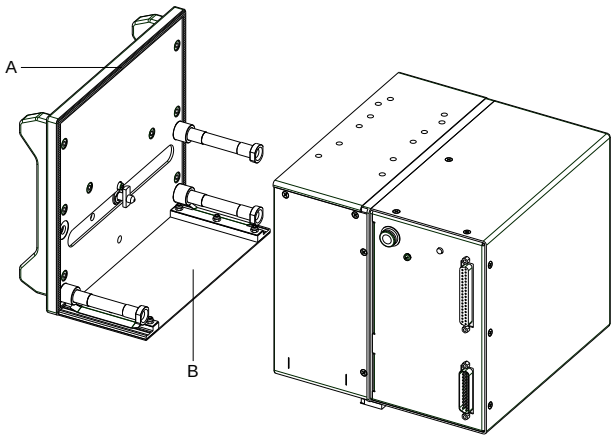


Figure 22

A = Sealing profile

B = Cover plate below with mounted parts

9.2 Use the Cleaning Cassette

1. Remove the transfer ribbon cassette necessary for printing (see chapter 8, page 43.
2. Push and lock the cleaing cassette in the same way.
3. By an inserted sealing profile (A, Figure 22) and a cover (B, Figure 23) the print mechanics is protected in such a way for ingress of water and dust.
4. The pneumatic tube and the connection cables to the control unit with the waterproof housings may not be removed.
5. Indications for maintenance and cleaning are described in chapter 12, page 103.
6. Before the resumption of printing the cleaning cassette must be changed again with the transfer ribbon cassette.

CAUTION!

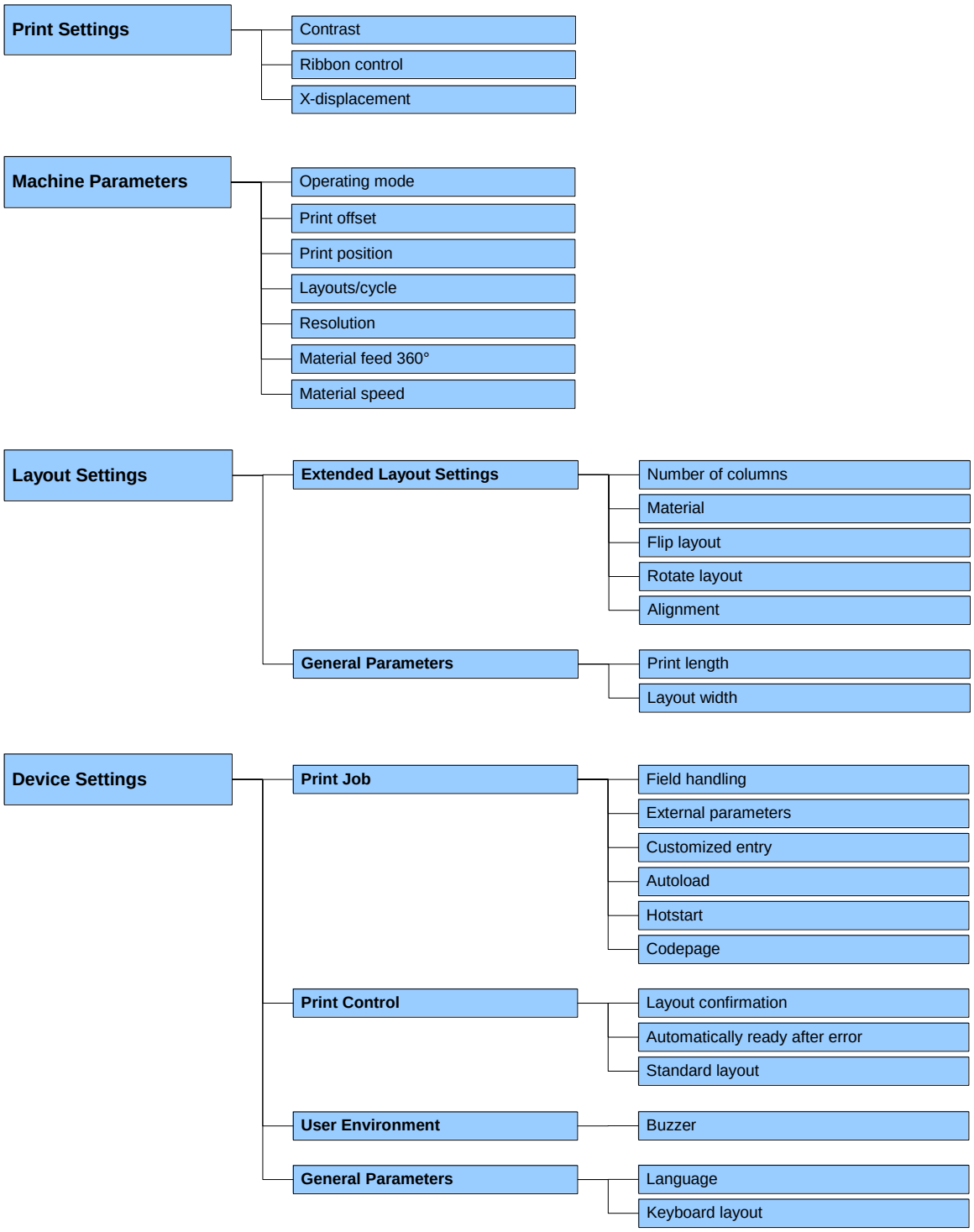
The direct print module can be damaged by ingress of water due to incorrect operation/locking.

⇒ After removing the cleaning cassette examine the print mechanics for ingress of water.

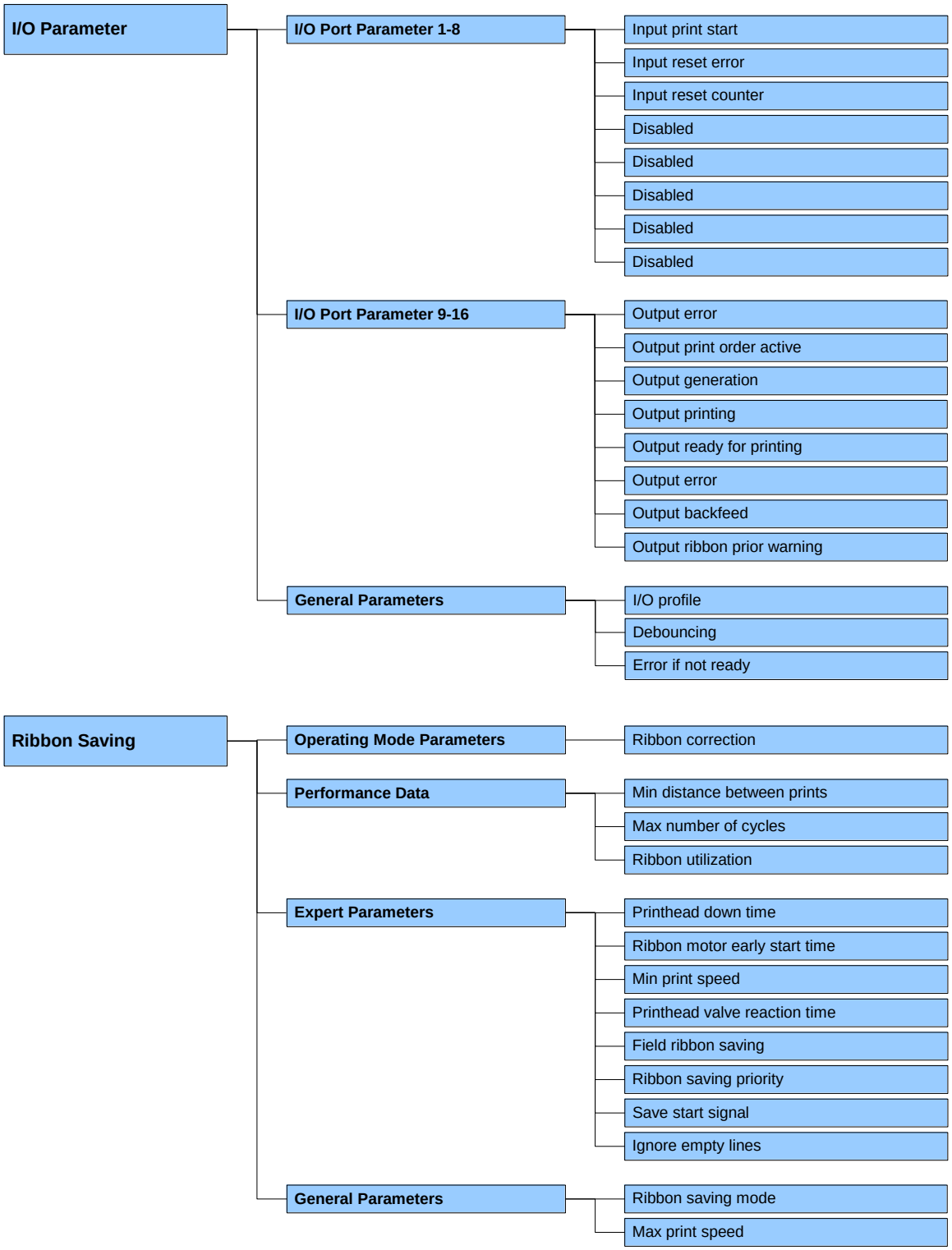
⇒ Before the device is again taken into operation, dry the approriate place well.

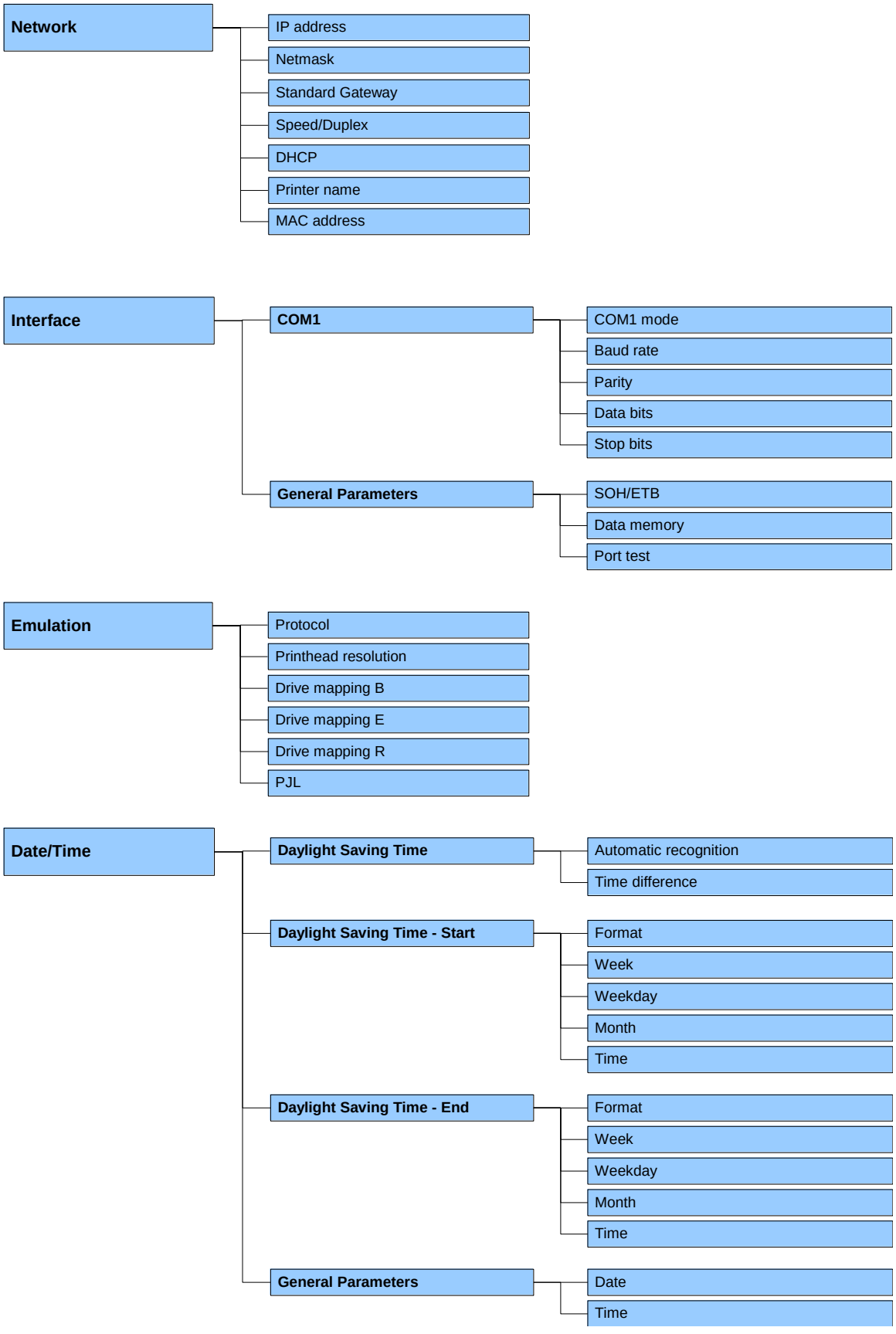
10 Function Menu

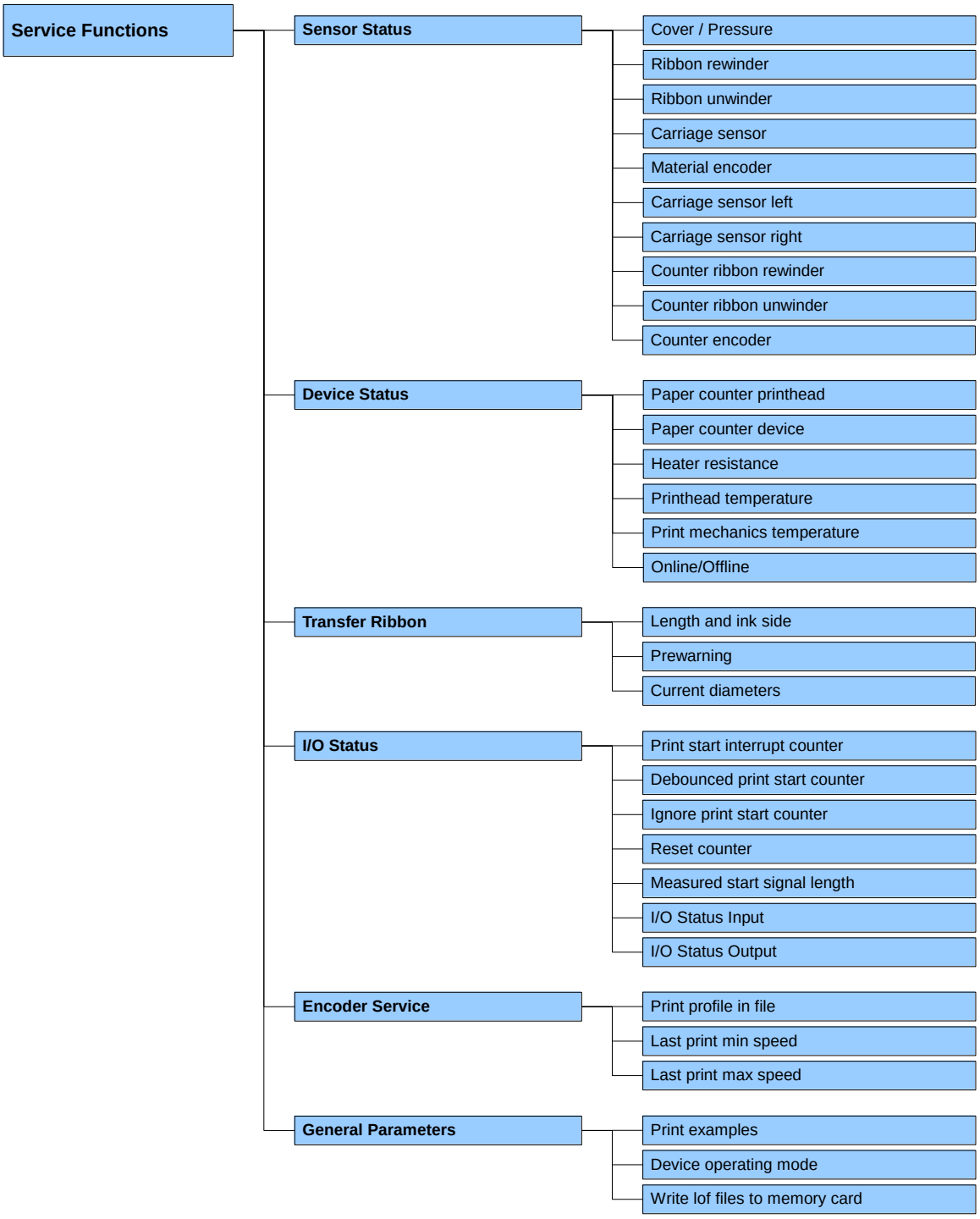
10.1 Menu Structure (Continuous Mode)

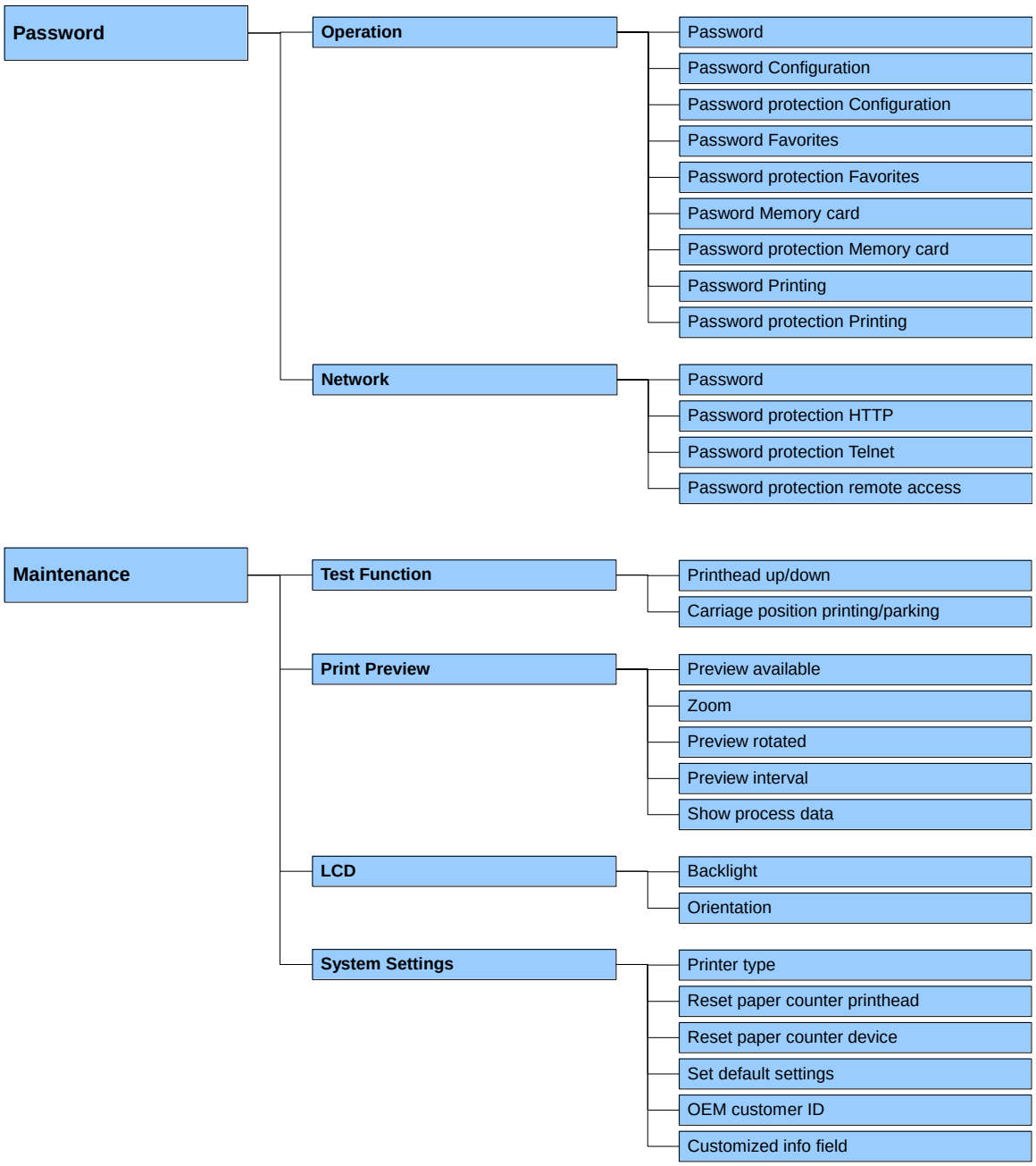


Export the latest menu structure from ConfigTool.
Printer settings --> Configuration --> Export

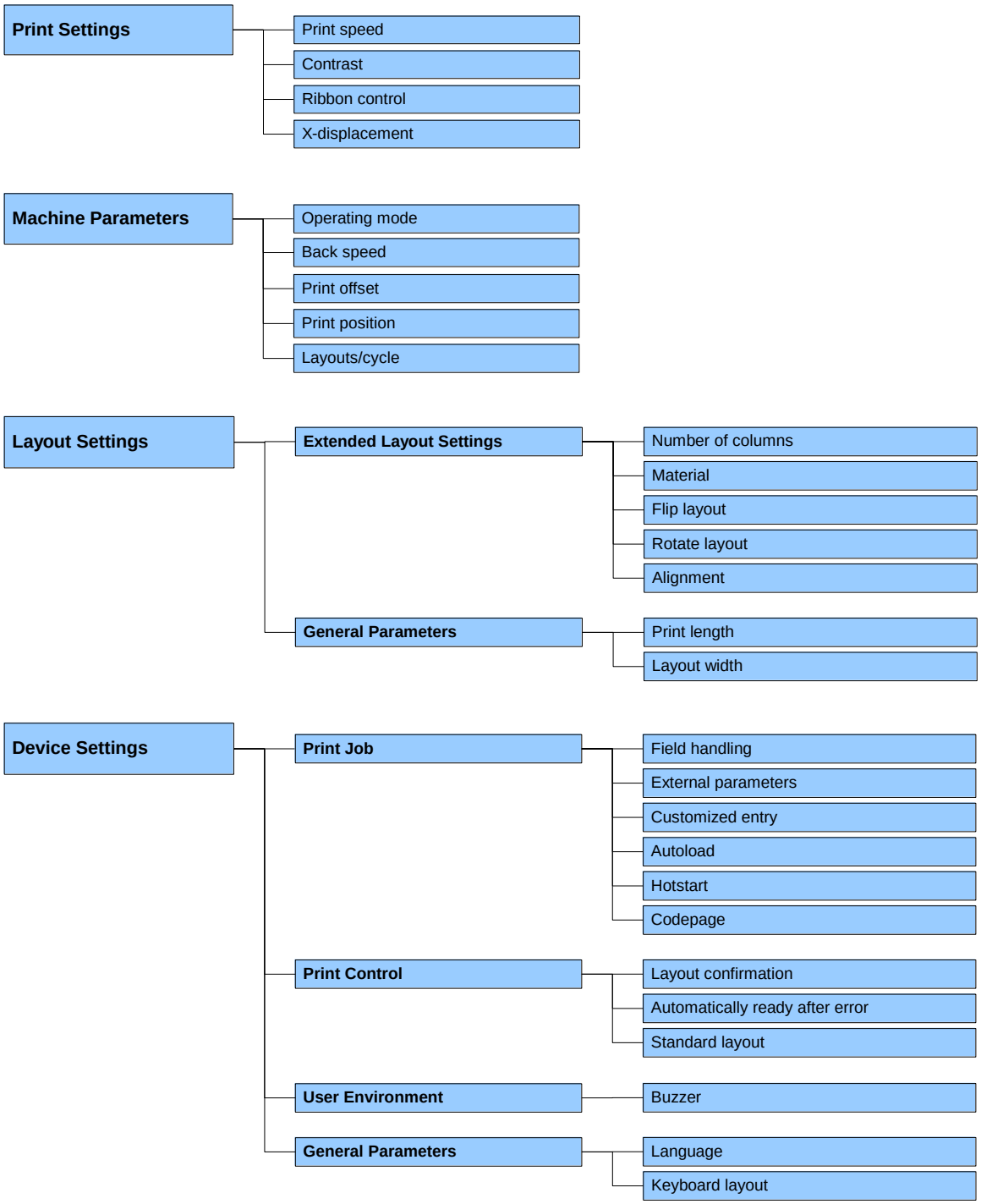

I/O Parameter
I/O Port Parameter 1-8
Input print start
Input reset error
Input reset counter
Disabled
Disabled
Disabled
Disabled
Disabled
I/O Port Parameter 9-16
Output error
Output print order active
Output generation
Output printing
Output ready for printing
Output error
Output backfeed
Output ribbon prior warning
General Parameters
I/O profile
Debouncing
Error if not ready
Ribbon Saving
Operating Mode Parameters
Ribbon correction
Performance Data
Min distance between prints
Max number of cycles
Ribbon utilization
Expert Parameters
Printhead down time
Ribbon motor early start time
Min print speed
Printhead valve reaction time
Field ribbon saving
Ribbon saving priority
Save start signal
Ignore empty lines
General Parameters
Ribbon saving mode
Max print speed


Network
IP address
Netmask
Standard Gateway
Speed/Duplex
DHCP
Printer name
MAC address
Interface
COM1
COM1 mode
Baud rate
Parity
Data bits
Stop bits
General Parameters
SOH/ETB
Data memory
Port test
Emulation
Protocol
Printhead resolution
Drive mapping B
Drive mapping E
Drive mapping R
PJL
Date/Time
Daylight Saving Time
Automatic recognition
Time difference
Daylight Saving Time - Start
Format
Week
Weekday
Month
Time
Daylight Saving Time - End
Format
Week
Weekday
Month
Time
General Parameters
Date
Time

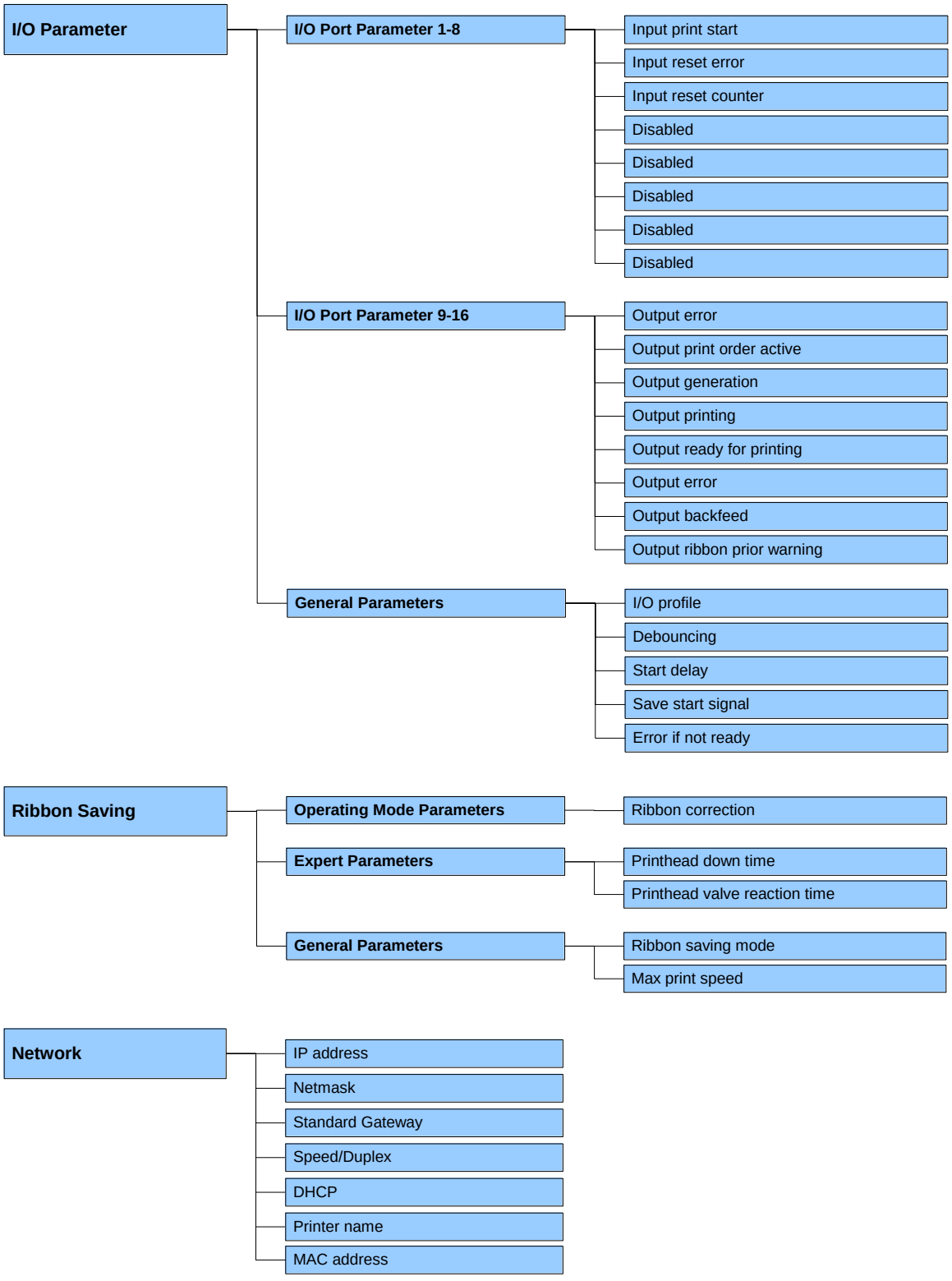

Service Functions
Sensor Status
Cover / Pressure
Ribbon rewinder
Ribbon unwinder
Carriage sensor
Material encoder
Carriage sensor left
Carriage sensor right
Counter ribbon rewinder
Counter ribbon unwinder
Counter encoder
Device Status
Paper counter printhead
Paper counter device
Heater resistance
Printhead temperature
Print mechanics temperature
Online/Offline
Transfer Ribbon
Length and ink side
Prewarning
Current diameters
I/O Status
Print start interrupt counter
Debounced print start counter
Ignore print start counter
Reset counter
Measured start signal length
I/O Status Input
I/O Status Output
Encoder Service
Print profile in file
Last print min speed
Last print max speed
General Parameters
Print examples
Device operating mode
Write lof files to memory card

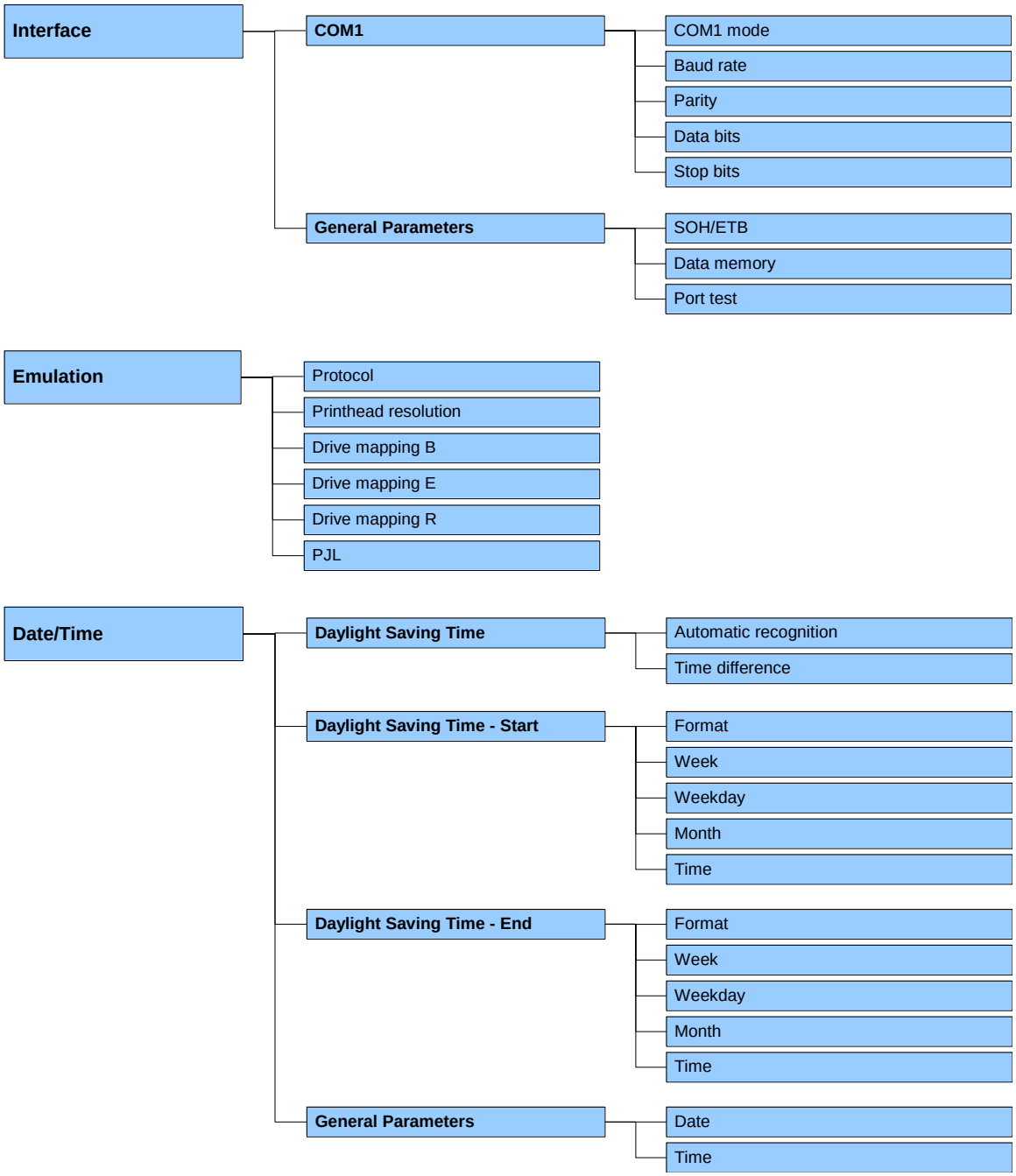

Password
Operation
Password
Password Configuration
Password protection Configuration
Password Favorites
Password protection Favorites
Pasword Memory card
Password protection Memory card
Password Printing
Password protection Printing
Network
Password
Password protection HTTP
Password protection Telnet
Password protection remote access
Maintenance
Test Function
Printhead up/down
Carriage position printing/parking
Print Preview
Preview available
Zoom
Preview rotated
Preview interval
Show process data
LCD
Backlight
Orientation
System Settings
Printer type
Reset paper counter printhead
Reset paper counter device
Set default settings
OEM customer ID
Customized info field

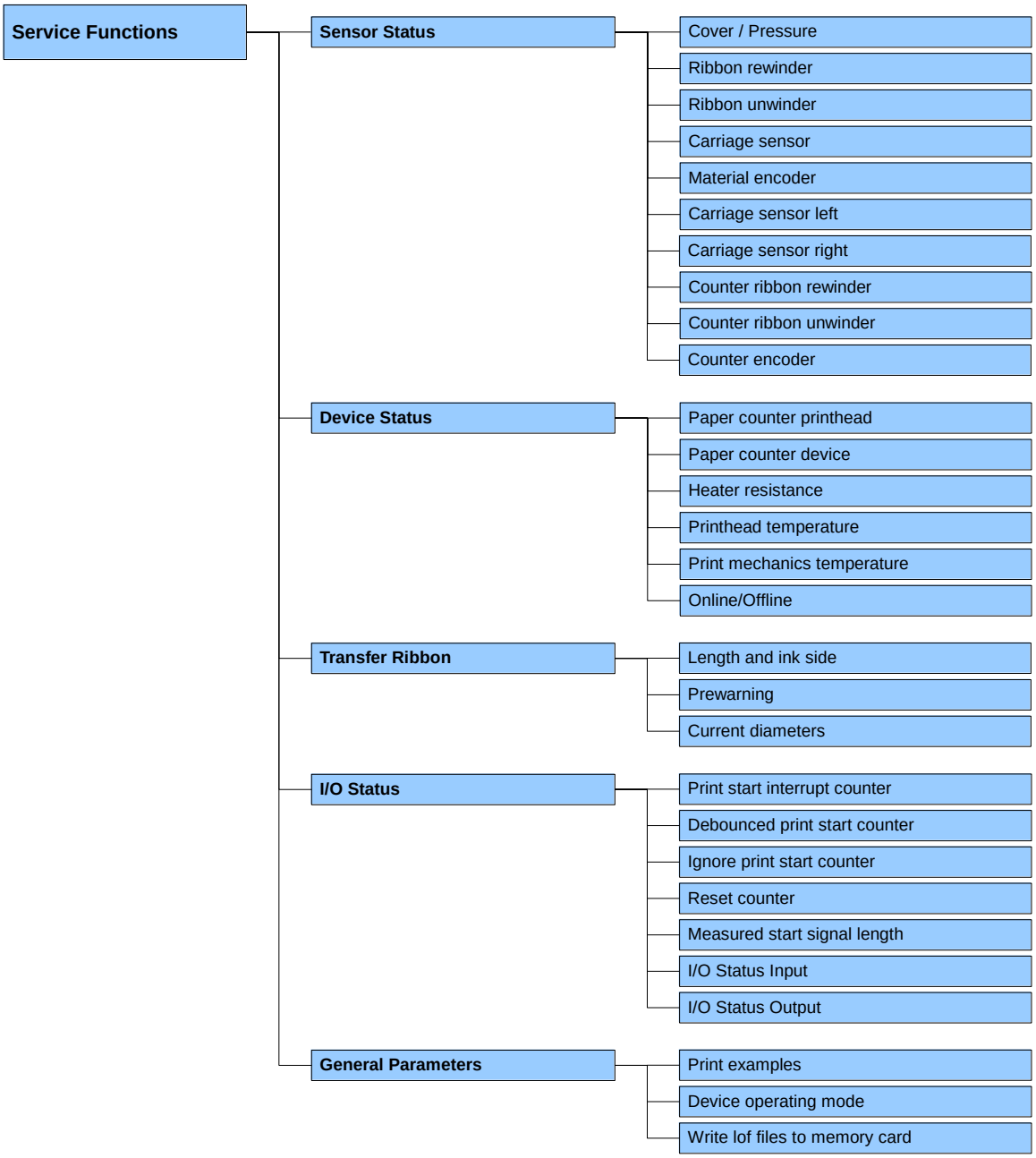
10.1 Menu Structure (Intermittent Mode)

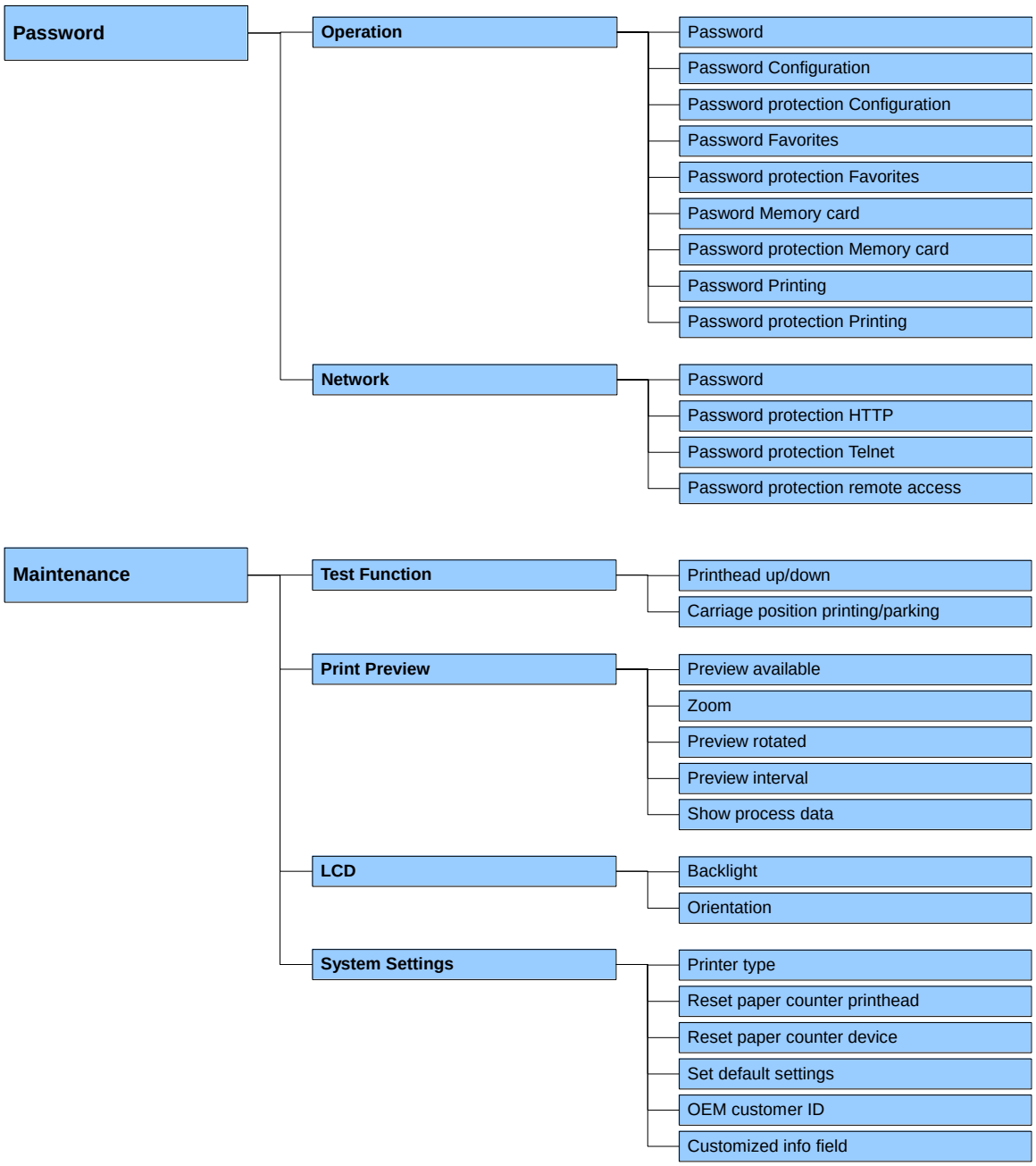


Export the latest menu structure from ConfigTool.
Printer settings --> Configuration --> Export


I/O Parameter
I/O Port Parameter 1-8
Input print start
Input reset error
Input reset counter
Disabled
Disabled
Disabled
Disabled
Disabled
I/O Port Parameter 9-16
Output error
Output print order active
Output generation
Output printing
Output ready for printing
Output error
Output backfeed
Output ribbon prior warning
General Parameters
I/O profile
Debouncing
Start delay
Save start signal
Error if not ready
Ribbon Saving
Operating Mode Parameters
Ribbon correction
Expert Parameters
Printhead down time
Printhead valve reaction time
General Parameters
Ribbon saving mode
Max print speed
Network
IP address
Netmask
Standard Gateway
Speed/Duplex
DHCP
Printer name
MAC address


Interface
COM1
COM1 mode
Baud rate
Parity
Data bits
Stop bits
General Parameters
SOH/ETB
Data memory
Port test
Emulation
Protocol
Printhead resolution
Drive mapping B
Drive mapping E
Drive mapping R
PJL
Date/Time
Daylight Saving Time
Automatic recognition
Time difference
Daylight Saving Time - Start
Format
Week
Weekday
Month
Time
Daylight Saving Time - End
Format
Week
Weekday
Month
Time
General Parameters
Date
Time


Service Functions
Sensor Status
Cover / Pressure
Ribbon rewinder
Ribbon unwinder
Carriage sensor
Material encoder
Carriage sensor left
Carriage sensor right
Counter ribbon rewinder
Counter ribbon unwinder
Counter encoder
Device Status
Paper counter printhead
Paper counter device
Heater resistance
Printhead temperature
Print mechanics temperature
Online/Offline
Transfer Ribbon
Length and ink side
Prewarning
Current diameters
I/O Status
Print start interrupt counter
Debounced print start counter
Ignore print start counter
Reset counter
Measured start signal length
I/O Status Input
I/O Status Output
General Parameters
Print examples
Device operating mode
Write lof files to memory card


Password
Operation
Password
Password Configuration
Password protection Configuration
Password Favorites
Password protection Favorites
Pasword Memory card
Password protection Memory card
Password Printing
Password protection Printing
Network
Password
Password protection HTTP
Password protection Telnet
Password protection remote access
Maintenance
Test Function
Printhead up/down
Carriage position printing/parking
Print Preview
Preview available
Zoom
Preview rotated
Preview interval
Show process data
LCD
Backlight
Orientation
System Settings
Printer type
Reset paper counter printhead
Reset paper counter device
Set default settings
OEM customer ID
Customized info field

10.2 Print Settings

Speed (intermittent mode only)

Indication of print speed in mm/s (see Technical Data, page 21). The print speed can be determined for each print order anew.
The setting of print speed affects also the test prints.
Value range: 50 … 600 mm/s
Step size: 10 mm/s

Contrast

Indication of value to set the print intensity when using different materials, print speeds or printing contents.
Value range: 10 % … 200 %.
Step size: 10 %

Ribbon control

Examination if the transfer ribbon roll is empty and/or if the ribbon was torn at the unwinding roll. The current print order is interrupted and an Error Message appears at the printer display.

Off: The ribbon control is deselected, i.e. the printer continues without an error message.

On, weak sensibility (default): The printer reacts at approx. 1/3 more slowly to the end of the transfer ribbon.

On, strong sensibility: The printer reacts immediately to the end of the transfer ribbon.

X displacement

Displacement of the complete print transverse to the paper direction. The displacement is possible only up to the edges of the printing zone and is determined by the width of the focal line in printhead.
Value range: −90.0 … +90.0.

10.3 Machine Parameters (Continuous Mode)

Operating mode

The print procedure cannot be started via the interface. The machine is always in control mode and the print is released by the control input *Print Start*. The operating mode is normally transferred with each layout otherwise mode *I/O dynamic continuous* is used as standard operating mode.
The following modes are available:

IO static:
The input signal is evaluated, i.e. it is printed as long as the signal exists. The number of layouts, which was entered at print start, is printed (level evaluation of print start signal).

IO static continuous:
Corresponds to IO static. Continuous means that not only a defined number of pieces is processed but the same layout is printed as long as new data is transferred by interface.

IO dynamic:
The external signal is evaluated dynamically, i.e. in case the direct print module is in 'waiting' mode a single layout is printed at each signal changing (flank evaluation of print start signal).

IO dynamic continuous:
Corresponds to IO dynamic. Continuous means that not only a defined number of pieces is processed but the same layout is printed as long as new data is transferred by interface.

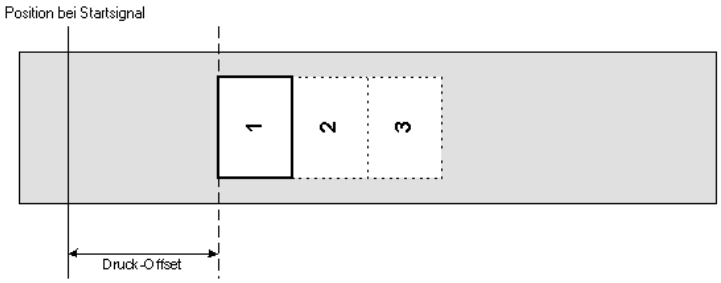
Test mode:
This operating mode corresponds to mode 2. After the return of the print unit to the zero point of the machine, however, internally a further cycle is started (endurance test).

Direct start:
A print order is transferred. After termination of generating process the print order is executed without an external signal.

Print offset

Indication of distance of the layout (res. the first layout in case more layouts per cycles are to be printed) to the zero point of machine.

Settings possible either in mm or ms.
Value range: 1 … 999 mm

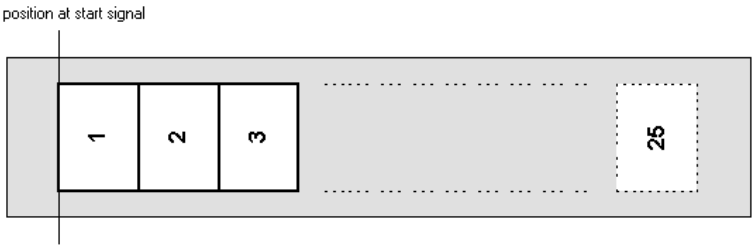


Print position

Indication of position of print carriage in mm.
Value range: 12 … 93 mm

Layouts/cycle

Indication of number of printed layouts per print start (cycle).
Value range: 1 … 25.



Resolution

Indication of resolution of used encoder.

Material feed 360 degrees

Indication of material feed per rotation of encoder in mm. These settings help measuring the material speed.
The material feeding per encoder rotation corresponds for instance, in a 1:1 translation between the encoder and the roller, to the roller circumference.

Material speed

Indication of material speed (only for reading purposes).

10.4 Machine Parameters (Intermittent Mode)

Operating mode

Number of pieces:
A print order with a defined number of pieces is transferred. After the generating process the target number and the actual number of pieces is shown in the display. A cycle is started via signal input 1. With each cycle the actual number of pieces is increased by the number of printed layouts. In case the target number of pieces is reached the print order is finished and the display shows again the main menu.

Continuous:
A print order is transferred. After the generating process the number of printed layouts is shown in the display. A cycle is started via signal input 1. With each cycle the number of printed layouts is increased. The print order is active as long as it is terminated by the user or in case of new data transmission.

Test mode:
This operating mode corresponds to mode 2. After the return of the print unit to the zero point of the machine, however, internally a further cycle is started (endurance test).

Direct start:
A print order is transferred. After termination of generating process the print order is executed without an external signal.

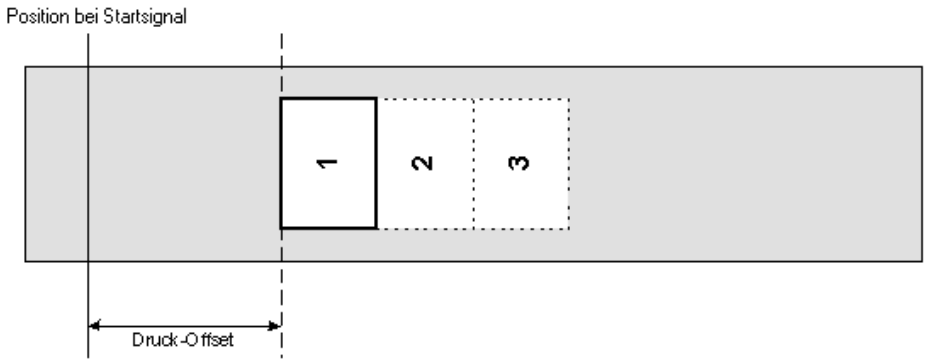
Back speed

Indication of back speed of print mechanics after print end in mm/s. Each cycle of the machine consists of printing and return to the zero point of machine. The print speed and back speed can be set separately.
Because of this value you can select for low machine clock cycles an operating method which saves the material and increases in this way the life of the printhead.

Because of the mass moment of inertia, it could be better to reduce the speed at an installation position of the print unit at >30° horizontal.
Value range: 50 … 600 mm/s.

Print offset

Indication of distance of the layout (res. the first layout in case more layouts per cycles are to be printed) to the zero point of machine.
Value range: 0 … 93 mm
Default: 0 mm

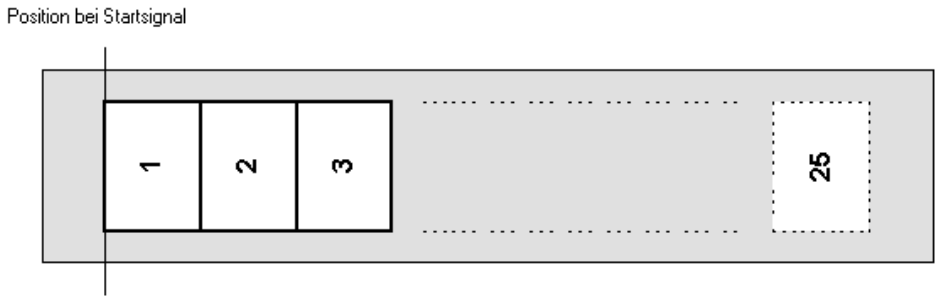


Print position

Indication of start position of print carriage in mm.
Value range: 0 … 93 mm
Default: 83 mm

Layouts/cycle

Indication of the number of printed layouts per print start (cycle).
Value range: 1 … 25.



10.5 Layout Settings

10.5.1 Extended Layout Settings

Number of columns

Indication of width of one layout as well as how many layouts are placed side by side on the backing paper.
With this print module, several columns can be printed, i.e. the information of one column can be printed several times (depending on its width) on a layout. Caused by this the use of the complete print width is possible and the generating time is enormously reduced.

Material

Selection of the used transfer ribbon material.

Flip layout

The axis of reflection is in the middle of the layout. If the layout width was not transferred to the direct print module, automatically the default layout width i.e. the width of the printhead is used. It is recommended to use layouts with the same width as the printhead. Otherwise this can cause problems in positioning.

Rotate layout

According to standard the layout is printed ahead with a rotation of 0°. If the function is activated, the layout is rotated by 180° and printed in reading direction.

Alignment

The adjustment of layout is effected only after *Flip/Rotate layout*, i.e. the adjustment is independent of the functions *Flip layout* and *Rotate layout*.

Left = The layout is aligned at the left-most position of printhead.

Centre = The layout is aligned at central point of printhead.

Right = The layout is aligned at right-most position of printhead.

10.5.2 General Parameters

Print length

Indication of way the print mechanics has to move. The print length depends on the length of the print mechanics.

Layout width

Indication of the layout width in mm.

10.6 Device Settings

10.6.1 Print Job

Field handling

Off: The complete print memory is deleted.
Keep graphic: A graphic res. a TrueType font is transferred to the direct print module once and stored in the direct print module internal memory. For the following print order only the modified data is transferred to the direct print module. The advantage is the saving of transmitting time for the graphic data.
The graphic data created by the direct print module itself (internal fonts, bar codes, ...) is generated only if they were changed. The generating time is saved.
Delete graphic: The graphics res. TrueType fonts stored in the internal memory is deleted but the other fields are kept.
Restore graphic: At the end of the print order the printed order can again be started at the direct print module. All graphics and TrueType fonts are again printed.
Exception: With column printing always full columns must be printed (number of pieces always multiple of the columns). Deleted columns are not restored.

External parameters

Layout dimension only: The parameters for layout length, gap length and layout width can be transferred to the printing system. All other parameter settings are to be made directly at the printing system.
On: Sending parameters such as speed and contrast via our design software to the printing system. Parameters which are set directly at the printing system before are no longer considered.
Off: Only settings made directly at the printing system are considered.

Customized entry

Off: No question appears at the display. In this case the stored default value is printed.

On: The question referring the customized variable appears once before the print start at the display.

Auto: The questions referring the customized variable and the quantity query appear after every printed layout.

Auto without quantity query: The question referring the customized variable appears after every layout without additional query for the quantity.

Autoload

On: A layout loaded once from CF card, can be reloaded after a restart of the printing system automatically.

Procedure: The used layout is saved onto CF card. The layout is loaded from CF card and printed. After switching the printing system Off and again On, the layout is loaded from CF card automatically and can be printed again.

NOTICE!

The last loaded label from CF card is always again loaded after a restart of printer.

Off: After a restart of printer the last used label must be again loaded manually from CF card.

NOTICE!

A common use of the functions Autoload and Hotstart is not possible. For a correct Autoload procedure the Hotstart must be deactivated in the printer.

Hotstart

On: Continue an interrupted print order after switching on the printer anew
Off: No question appears at the display. In this case the stored default value is printed 15.1, page 117).

Codepage

Indication of the font used in the direct print module.
The following possibilities are available:

Codepage 1252 West European (former ANSI)

Codepage 437 English

Codepage 850 Western European

Codepage 852 Slavic

Codepage 857 Turkish

Codepage 1250 Central and East European

Codepage 1251 Cyrillic

Codepage 1253 Greek

Codepage 1254 Turkish

Codepage 1257 Baltic

WGL4

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

10.6.2 Print Control

Layout confirmation

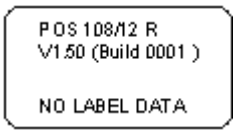
On: A new print order is only printed after confirmation at the device. An already active continuing print order is printed as long as the confirmation is effected at the device.
Off: No query appears at the display of control unit.

Auto ready after error

On: If an error occurred during printing, whose removal can be recognized by the module (e.g. transfer ribbon end, cassette open), then the module changes after the error correction (e.g. cassette closed again) immediately in the 'ready' mode.
Off: After removal and confirmation of error, the module changes into 'stopped' mode.

Standard layout

On: If a print order is started without previous definition of layout, the standard layout is printed.



Off: If a print order is started without previous definition of layout, an error message appears in the display.

10.6.3 User Environment

Buzzer

On (1-7): An acoustic signal is audible when pressing a key.
Off: No signal is audible.

10.6.4 General Parameters

Language

Selection of language the display indicates texts in the graphic display. At the moment the following languages are available: German, English, French, Spanish, Finnish, Czech, Portuguese, Dutch, Italian, Danish, Polish, Greek, Hungarian, Russian, Chinese (option), Ukrainian, Turkish, Swedish, Norwegian.

Keyboard layout

Selection of region for the desired keyboard layout.
The following possibilities are available: German, English, French, Greek, Spanish, Swedish, US, Russian.

10.7 I/O Parameters

10.7.1 I/O Port Parameter 1-8

Input print start

Input reset error

Input reset counter

Disabled

Disabled

Disabled

Disabled

Disabled

10.7.2 I/O Port Parameter 9-16

Output error

Output print order active

Output generation

Output printing

Output ready

Output error

Output backfeed

Output ribbon prior warning

10.7.3 General Parameters

I/O profil

Selection of the available confiruration *Std_Direct* (factory setting), *StdFileSelDirect, SP_Direct0* or *Old_Direct0*.

The corresponding assignment is indicated in chapter 6.1, page 23.

Debounce

Indication of debounce time of the dispenser input. The setting range of the debounce time is between 0 and 100 ms.
In case the start signal is not clear then you can debounce the input by means of this menu item.

Start signal delay (intermittent mode)

Indication in time per second of the delay for the start signal.
Value range: 0.00 … 9.99.

Save signal (intermittent mode only)	**On:** The start signal for the next layout can already be released during printing the current layout. The signal is registered from the printing system. The printing system starts printing the next layout immediately after finishing the current one. Therefore time can be saved and performance be increased. **Off:** The start signal for the next layout can only be released if the current layout is printed to the end and the printing system is again in 'waiting' state (output 'ready' set). If the start signal was released already before, so this is ignored.
Not ready: error	**On:** If a print order is active but the direct print module is not ready to process the order (e.g. if it is already in 'printing' mode), then an error message appears. **Off:** No error message appears.

10.8 Ribbon Saving (Continuous Mode)

Mode	Off	No ribbon saving.
	Standard	Maximum ribbon saving performance, i.e. with this setting there is no loss of transfer ribbon (apart from the safety distance of 1 mm, so the print fields are not printed one into the other). No settings are allowed with which the ribbon saving no more cannot be achieved. This particularly applies for the print offset, which can only be adjusted now in the valid range (see chapter 16.2, page 120).
	Shift	Layout data can be printed several times laterally displaced. A maximum utilization of transfer ribbon can be achieved (see chapter 16.3, page 123).
	SaveStart	No start signal loss, direct print module regulates the ribbon saving quality automatically according to requirement. Automatic layout ribbon saving and field ribbon saving, each without feedback (see chapter 16.4, page 127).

10.9 Ribbon Saving (Intermittent Mode)

Mode	Off	No ribbon saving.
	Standard	Maximum ribbon saving performance, i.e. with this setting there is no loss of transfer ribbon (apart from the safety distance of 1 mm, so the print fields are not printed one into the other). No settings are allowed with which the ribbon saving no more cannot be achieved. This particularly applies for the print offset, which can only be adjusted now in the valid range (see chapter 16.5, page 129).
	Shift	Layout data can be printed several times laterally displaced. A maximum utilisation of transfer ribbon can be achieved (see chapter 16.6, page 130).

10.10 Network

IP address (DHCP)

Each participant must have a 32 bit address. The IP address is separated by full stops and arranged into four parts. Each part has a number range of 0 … 255.

Network mask (DHCP)

In connection with the IP address of the printer, the netmask determines which IP addresses this device searches in the own network.

Standard gateway (DHCP)

The IP address of the network gateway. If the IP address was referred by DHCP then DHCP is indicated in brackets.

Speed and duplex

Automatic:	Default setting. The speed is recognized automatically. Normally this procedure is reliable. In most cases it is not necessary to change the settings.
10 Mbit half:	Speed 10 Mbit/s in the half-duplex transmission method.
10 Mbit full:	Speed 10 MBit/s in the full-duplex transmission method.
100 Mbit half:	Speed 100 MBit/s in the half-duplex transmission method.
100 Mbit full:	Speed 100 MBit/s in the full-duplex transmission method.

DHCP

DHCP permits the automatic referring of the network parameters IP address, network mask and standard gateway of a DHCP server which must be installed in the network.

Printer name

The name of the installed printer in the network. The printer name in connection with DHCP can be used to respond the printer. If DHCP is active and the name of the printer is changed, the printer logs out itself at the DHCP server and afterwards the printer logs in again. After changing the printer name, the printer can have a new IP address.

MAC address

The MAC address (Media Access Control) is the hardware address of each individual network adapter and serves for the clear identification of the printer in network.

10.11 Interface

10.11.1 COM1

COM1 mode

Off: serial interface Off
On (mode 1): serial interface On
On (mode 2): serial interface On; no error message appears in case of a transmission error

Baud rate

Indication of bits which are transferred per second (speed of data transfer).
Value range: 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200.

Parity

None: No parity
Even: Even parity
Odd: Odd parity

Data bits

Setting of data bits.
Value range: 7 or 8 Bits.

Stop bits

Indication of stop bits between bytes.
Value range: 1 or 2 stop bits.

10.11.2 General Parameters

SOH/ETB

SOH: Start of data transfer block → Hex format 01
ETB: End of data transfer block → Hex formal 17

Two different start / en signs can be set. The settings are normally SOH = 01 HEX and ETB = 17 HEX. Several host computers cannot process these signs and therefore SOH = 5E HEX and ETB = 5F cannot be set.

Data memory

Off: After starting a print order no more data is received.
Standard: After starting a print order the printer buffer receives data as long as it is filled.
Advanced: During a current print order data is received and processed.

Port test

Check whether the data are transferred via the interface.

10.12 Emulation

Protocol

CVPL: Carl Valentin Programming Language
ZPL: Zebra® Programming Language
Change between CVPL protocol and ZPL II® protocol.

The printer performs a restart and ZPL II® commands are transformed into CVPL commands internally by the printer and then executed by the printer.

Printhead resolution

At activated ZPL II® emulation the printhead resolution of the emulated printer must be set, e.g. 11.8 Dot/mm (= 300 dpi).

NOTICE!

If the printhead resolution of the Zebra® printer differs from that of the Valentin printer, then the size of objects (e.g. texts, graphics) complies not exactly.

Drive mapping

The access to ® drives
B: CF cart
E: Flash drive
R: RAM disk (standard drive, if not indicated)

is rerouted to the corresponding Valentin drives
A: CF
R: RAM disk
U: USB stick

This can be necessary if the available space on the RAM disk (at present. 512 KByte) is not sufficient or if bitmap fonts are downloaded to the printer and be stored permanently.

NOTICE!

As the printer build-in fonts in Zebra® printers are not available in Valentin printers, this can cause small differences in the text image.

PJL (Printer Job Language)

Status information regarding the print order can be indicated.

10.13 Date/Time

10.13.1 Daylight Saving Time (DST)

Daylight saving time
On: Printer automatically adjust clock for daylight saving changes.
Off: Summertime is not automatically recognized and adjusted.

DST difference (HH:MM
Indication of time difference in hours and minutes for summer/winter time changeover.

10.13.2 Start Daylight Saving Time

DST start (format)
Selection of format to enter the start of the daylight saving time (European format).

DD = day	WW = week	WD = weekday
MM = month	YY = year	NWD = only next day is taken into consideration

DST start date (week)
Selection of the week when the daylight saving time should begin.

DST start date (weekday)
Selection of weekday when the daylight saving time should begin.

DST start date (month)
Selection of month when the daylight saving time should begin.

DST start time (HH:MM)
Selection of time when the daylight saving time should begin.

10.13.3 End Daylight Saving Time

DST end (format)
Selection of format to enter the end of the daylight saving time.
The example shows the standard settings (European format).

DST end date (week)
Selection of the week when the daylight saving time should end.

DST end date (weekday)
Selection of the weekday when the daylight saving time should end.

DST end date (month)
Selection of the month when the daylight saving time should end.

DST end time (HH:MM)
Selection of time when the daylight saving time should end.

10.13.4 General Parameters

Date (DD.MM.YY)
Indication of current date.

Time (HH:MM:SS)
Indication of current time.

10.14 Service Functions

10.14.1 Sensor Status

Cover / Pressure	Cover: Only available at devices with cover switch. Indication of value 0 or 1 for cover open and/or cover closed Pressure: Indication of value 0 or 1 or compressed air control.
Ribbon encoder winder	Indication of value 0 to 3 for the status of transfer ribbon rewinding roll. Indication of transfer ribbon rewinding roll status. 4 states are indicated (no marking in photocell, marking from right, marking from left, marking completely in photocell).
Ribbbon encoder unwinder	Indication of value 0 to 3 for the status of transfer ribbon unwinding roll. Indication of transfer ribbon unwinding roll status. 4 states are indicated (no marking in photocell, marking from right, marking from left, marking completely in photocell).
Carriage sensors	Indication of print carriage position.
Material encoder	Indication of current state of encoder
Carriage sensor left	Verifies the left stop of printing carriage.
Carriage sensor right	Verifies the right stop of printing carriage.
Counter ribbon encoder rewinder	In the case of a full rotation of the transfer ribbon encoder rewinder, the counter should be increased/decreased by the second value (depending on the direction of rotation). If this is not the case, there may be a problem with the sensor.
Counter ribbon encoder unwinder	In the case of a full rotation of the transfer ribbon encoder unwinder, the counter should be increased/decreased by the second value (depending on the direction of rotation). If this is not the case, there may be a problem with the sensor.
Material encoder counter	Indication of counter status of encoder.

10.14.2 Device Status

Paper counter printhead
Indication of printhead attainment in meters.

Paper counter machine
Indication of direct print module attainment in meters.

Heater resistance
To achieve a high print quality, the indicated Ohm value must be set after replacing the printhead.

Printhead temperature
Indication of printhead temperature. The printhead temperature corresponds normally to the room temperature. In case the maximum printhead temperature is exceeded, the current print order is interrupted and an error message appears at the direct print module display.

Mechanics temperature
Indication of print mechanics temperature.

Online / Offline
This function is activated e.g. if the transfer ribbon is to be changed. It is avoided that a print order is processed although the module is not ready. The respective state is indicated in the display.

Standard: Off

Online: Data can be received by interface.
Offline: The keys of the foil keyboard are still active but received data are not processed. If the module is again in Online mode then new print orders can be again received.

10.14.3 Ribbon Service

Length and ink side
Selection of the used transfer ribbon length (300 m, 450 m, 600 m, 900 m or 1000 m). With smaller ribbons, a higher number of cycles can be reached.

Selection of the coating side of transfer ribbon, either outside or inside.
Default: Coating outside

Prewarning
Ribbon prior warning: Before the end of transfer ribbon, a signal is sent by the control output.

Ribbon prior warning diameter: Setting of transfer ribbon advance warning diameter.
In case you enter a value in mm then a signal appears via control output when reaching this diameter (measured at transfer ribbon roll).

Ribbon prior warning mode:
Warning: When reaching the transfer ribbon advance warning diameter, the corresponding I/O output is set.
Error: The printing system stops when reaching the transfer ribbon advance warning diameter with the message 'too less ribbon'.

Current diameters

Roll diameter: Indication how much transfer ribbon is still on the transfer ribbon roll. For a correct display some layouts must be reprinted.

Time left: Indication during a current print order, how long it can be printed with the existing transfer ribbon.

Diameter ribbon rewinder: Indication how much transfer ribbon is already on the rewinding roll, i.e. how much transfer ribbon was already used.

Diameter ribbon unwinder: Indication how much transfer ribbon is still on the unwinding roll.

Remaining roll length: Indication how much transfer ribbon in meters is still on the ribbon roll available.

10.14.4 I/O Status

PrtStrtIntsReal The start input impulses are counted directly at the Interrupt.

PrtStrtIntsDebounced The start input impulses that are longer than the set debounce time are counted. Only these start impulses can lead to a print. If a start impulse is too short, no print is released. This is recognized by the fact that RInt is counted, Dbnc not.

PrtStrtIntsNoPrint The debounced start input impulses that have not led to a print are counted. Causes: no active print order, print order stopped (manually or because of an error) or the printing system is still active with the processing of a print order.

PrtStrtReset The counters are reset.

PrtStrtTime Measured length of the last start impulse in ms.

I/O status input

Indication of input signal level
0 = Low
1 = High

Port		Function
1	=	Print start
2	=	Cut
3	=	Counter reset
4	=	External synchronization of label position
5	=	No function
6	=	No function
7	=	No function
8	=	No function

I/O status output

Indication of output signal level
0 = Low
1 = High

Port		Function
9	=	Error
10	=	Print order active
11	=	Label available at dispenser photocell – with dispenser photocell
12	=	Print end
13	=	Ready
14	=	RFID error – only with option RFID
15	=	Scanner: bar code not readable – only with option scanner
16	=	Ribbon prior warning

10.15 Encoder Service*

Encoder profile

The encoder values with print start in logging files are registered on CF card. By means of this data, a graphic chart of the encoder curve can be created.
For further information please contact our support department.

Last print min. speed

Indicates the speed fluctuation within one layout measured by the rotary encoder.

Measured minimum speed of the last layout.

Last print max. speed

Indicates the speed fluctuation within one layout measured by the rotary encoder.

Measured maximum speed of the last layout.

* continuous mode only

10.15.1 General Parameters

Print examples

Settings: Printout of all device settings such as speed and transfer ribbon material.
Bar codes: Printout of all available bar code types.
Fonts: Printout of all available font types.

Device operating mode

Define whether the printing system is used in continuous mode (see page 13) or in intermittent mode (see page 15).

Write log files to memory card

Starting with firmware version 1.70, the printer logs different events internally. In case of service, the error cause can be located faster.

With this command, different log files are saved on an existing storage medium (memory card or USB stick). After the 'Finish' message the storage medium can be removed.

The files are in directory 'log':

LogMemErr.txt: Logged errors with additional information such as date/time and file name/line number (for developers).

LogMemStd.txt: Logging of selected events.

LogMemNet.txt: Data latest send via port 9100.

Parameters.log: All printer parameters in human readable form.

TaskStatus.txt: Status of all printer tasks.

The files *LogMemErr.txt* and *LogMemStd.txt* are written in circle, i.e. old contents are overwritten. The entry logged last is marked with „---„

10.16 Password

With a password different functions can be blocked for the operator. There are different applications with which such a password protection can be used reasonably. To receive a most flexible password protection, the printing system functions will be divided into several function groups.

Because of these different function groups, the password protection is very flexible. The printing system can be adjusted best to its actual order, as only certain functions are blocked.

10.16.1 Operation

Password

Entering a 4-digit numeric password.

Protection configuration

Device settings can be changed (contrast, speed, operating mode, ...). The password protection prevents modifications at the device settings.

Protection favorites

The password protection prevents the access to the favorites.

Protection memory card

With the functions of the memory card, labels can be stored, loaded, etc. The password protection has to decide if no access or only readable access on CF card is allowed.

No protection: No password protection
Userview only: Only reading access
Protected: Access blocked

Protection Printing

In case the printing system is connected to a PC, it can be useful, that the user is not able to produce a print manually. So the password protection prevents that prints can be produced manually.

In order to execute a blocked function, first of all the valid password has to be entered. If the correct password is entered then the desired function can be executed.

10.16.2 Network

Password

Entering a 15-digit password. The password can consist of alphanumeric and special characters.

Protection HTTP

The communication by HTTP can be avoided.

Protection Telnet

The settings of the Telnet service cannot be changed.

Protection remote access

The password protection prevents the remote control of the printer.

In order to execute a blocked function, first of all the valid password has to be entered. If the correct password is entered then the desired function can be executed.

10.17 Maintenance

10.17.1 Test Function

Printhead up/down

The printhead can be moved manually downward and upwards.

Carriage position print/park

The printing carriage can be moved manually into the print and park position.

10.17.2 Print Preview

Preview available

With activated print preview a picture of the currently printed layout is shown on the display. If the function is not activated, the field remains empty.

Zoom

Selection of a certain zoom value for the representation of print preview.

Label: The complete layout is fit to the indication zone.

Fields: Only the print range is fit to the indication zone.

1 .. 8: Manual zoom factor to scale the complete layout down.

Preview rotated

The display of label preview can be rotated on the touch-screen display.
On: The label preview is shown rotated by 180° on the display.
Off: The label preview is represented in read direction.

Preview interval

During a running print order the preview is refreshed in the set interval.

Show process data

With activated print preview, the currently printed layout is shown on the display. Wipe to the right to change to the process data view.

In order to show the process data, the parameter must be activated before in the menu *Maintenance/Print preview*.

10.17.3 LCD

Backlight

Setting of contrast of background lighting.

LCD orientation

Landscape 180°: The display is represented turned by 180 degres to the function 'Landscape'.

Landscape: The display is represented turned by 90 degres to the reading direction.

Portrait: The display is represented in reading direction.

Portrait 180°: The display is represented turned by 180 degres.

10.17.4 System Settings

NOTICE!

All settings and modifications in system settings require the respective password.

The following system settings can be made:

- Device type
- Reset paper counter printhead
- Reset paper counter device
- Set default settings
- OEM client ID

10.18 Main Menu

Switch on the direct print module and the display shows the Home screen

Press button  to display information such as module type, current date and time, version number of firmware and used FPGA.

11 Touch-Screen Display

11.1 Touch-Sscreen Display Structure

The touch-screen display shows an intuitive graphic user interface with well-defined symbols and buttons.

The touch-screen display informs about the current device status and status of the print order, alerts in case of an error and indicates the device settings in the menu.

The desired settings are made by selecting the buttons on the touch-screen display.

Current date & time

Printer name (in the network parameters)

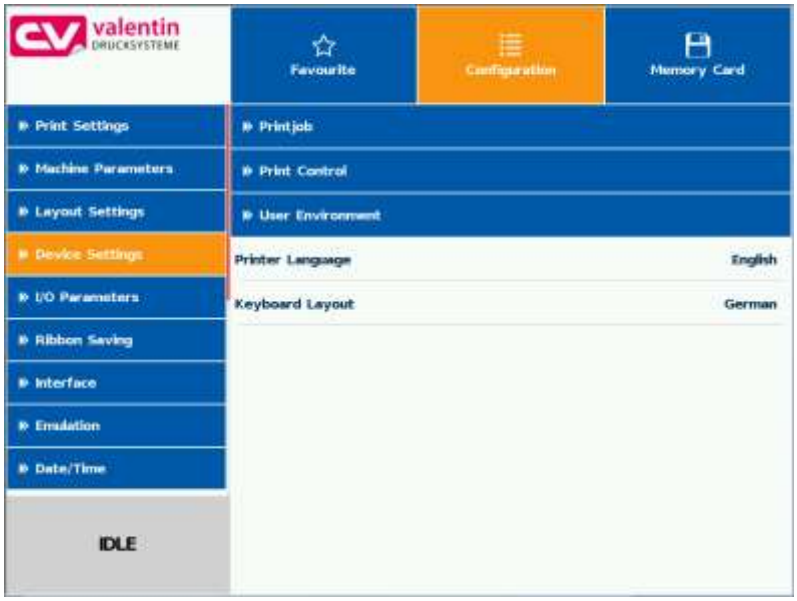
Transfer ribbon status

Customized info field

Favorites	Display favorites list
Configuration	Select parameter settings
Memory Card	Access to memory card menu
Print	Start print job
Test print	Start test print
Formfeed	Start layout feed
Info	List of the installed components

11.2 Different Menus

Indication of main menus

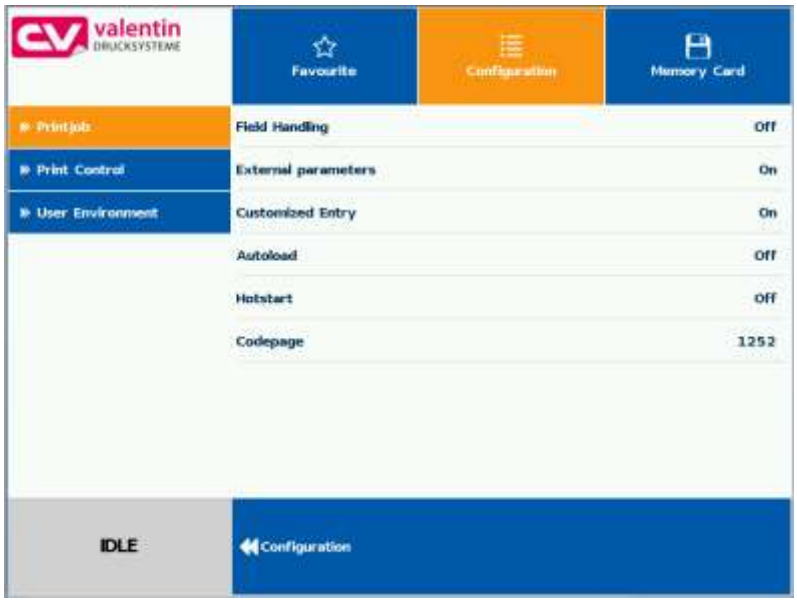


The selected (active) menu is highlighted on orange background.

If a selected menu contains so-called submenus, these are blue highlighted.

Indication of submenus

Different parameters are combined in a submenu.



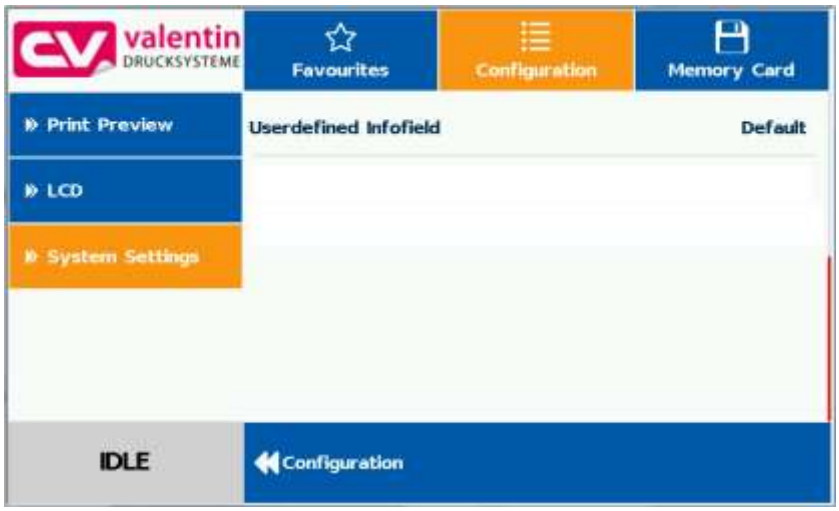
The left display side shows the available submenus. The currently selected (active) submenu is highlighted on orange background.

Press to return one level.

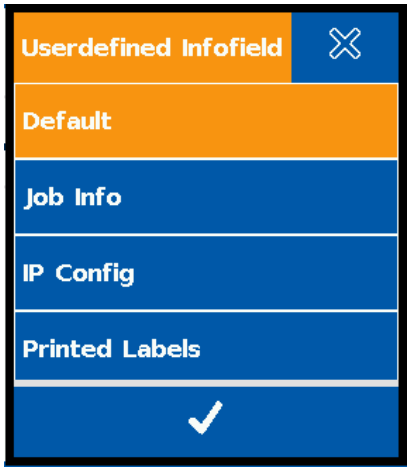
11.3 User-Defined Info Field

From the predefined contents, the user can define the display of the user-defined info field (green).

Select the menu *Maintenance/System settings/User-defined info field* to specify what is to be displayed in the user-defined info field.



Selection of parameters

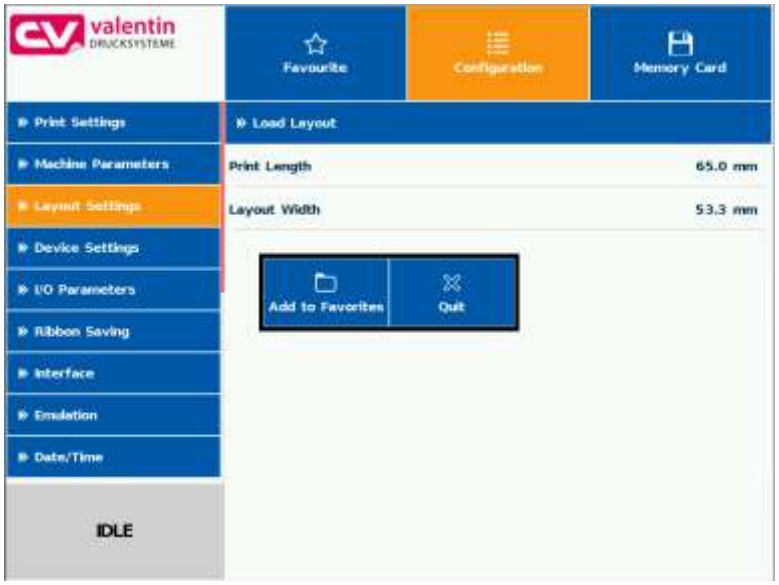


Standard:	Horizontal display orientation: Empty info field **Vertical display orientation:** Indication of job info (label name and number of printed labels)
Job info:	Indication of label names and the number of already printed
IP configuration:	Indication of IP address and MAC address of printing system
Printed labels:	Indication of printed labels as enlarged text output

Display of predefined configuration

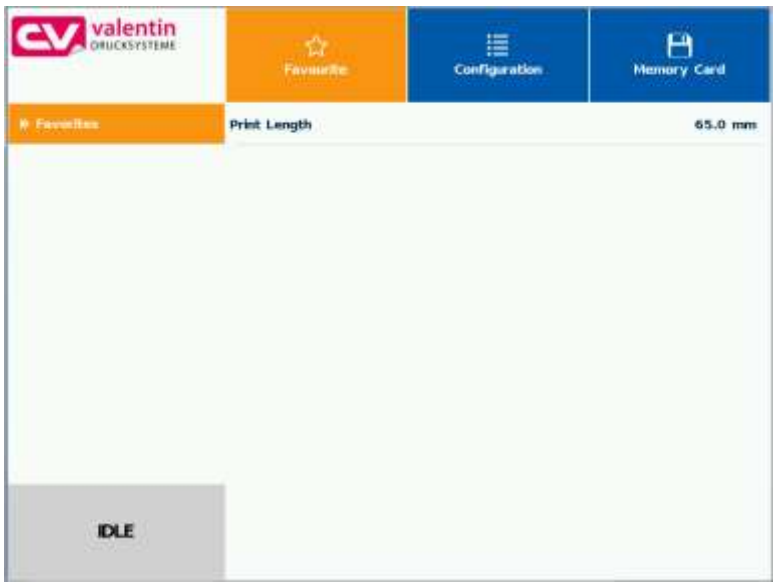
11.4 Favorites List

Add parameters to favorites

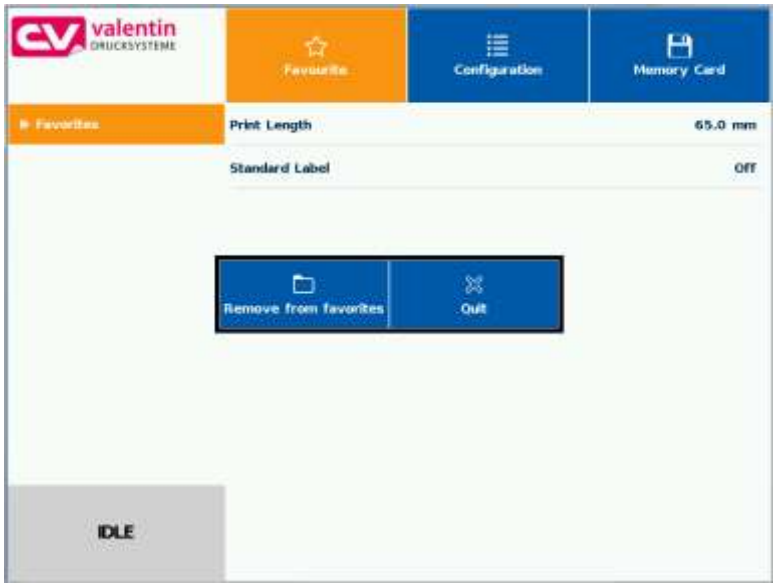


Press long (2 s) on a parameter (e.g. print speed) to display the appropriate selection.

Press *Add to favorites* to add the selected parameter to the favorites list.



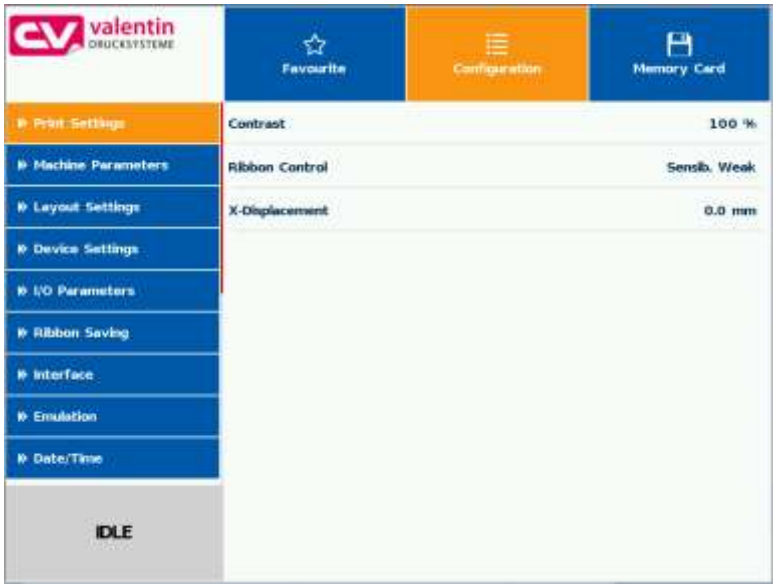
Remove parameters from favorites



Press long (2 s) on a parameter (e.g. print speed) to display the appropriate selection. Press *Remove from favorites* to remove the selected parameter from the favorites list.

11.5 Parameter Input

Parameter input



Numeric input

In the header of input dialog the name of the parameter and the permissible value range are shown. The input is checked for validity. If the entered value not permissible, the button is blocked.

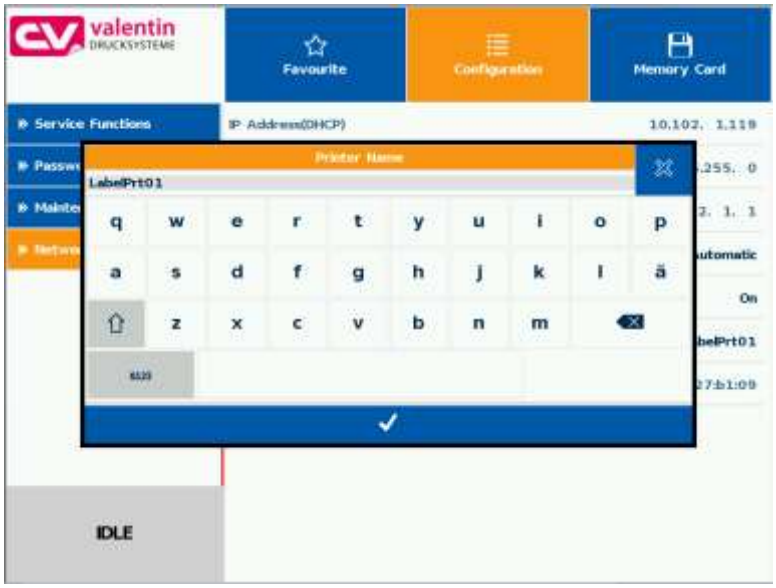
Selection from list

Select the parameter for which you want to change the selection.

The currently selected value is highlighted on orange background.

Press ✓ to confirm the selection.

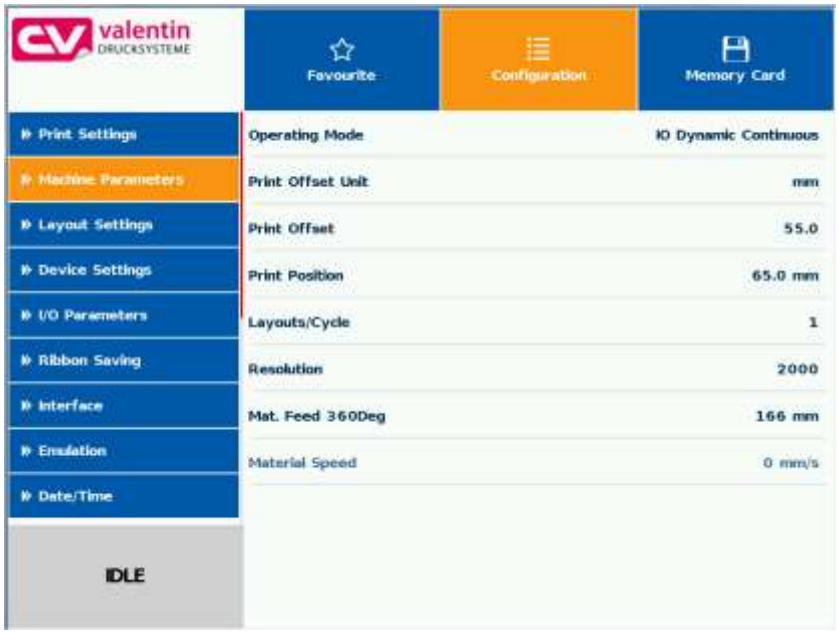
Alphanumeric input



The alphanumeric input is shown in the header of input dialog.

Press ✓ to confirm the selection.

11.6 Navigation Zones



The respective navigation zone can be moved with an appropriate swipe movement from top to bottom or from the bottom up.

NOTE!

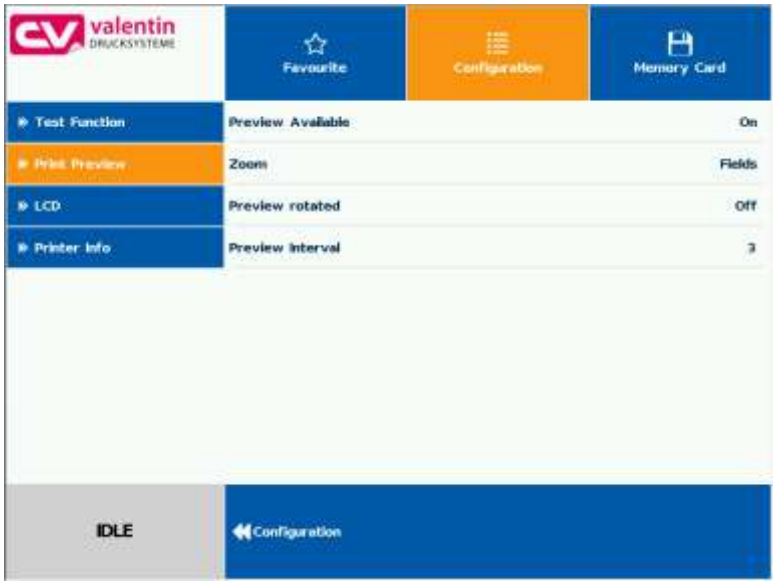
With the used resistive touch screen variant, a certain pressure on the display is needed.
With the swipe movement to the left and right (well-known from smartphones) with the finger, cannot be navigated on the display.

The position indications signalise the detail of the total list currently visible. If no position indication is visible then the total list can be displayed on the display. A swipe movement from top to bottom and/or from the bottom up is not possible.

11.7 Maintenance Zone

Different settings for the display indication can be done.

Maintenance - Print preview



Print preview activated On/Off

With activated print preview a picture of the currently printed layout is shown on the display. If the function is not activated, the field remains empty.

Print preview – Zoom

Selection of a certain zoom value for the representation of print preview.

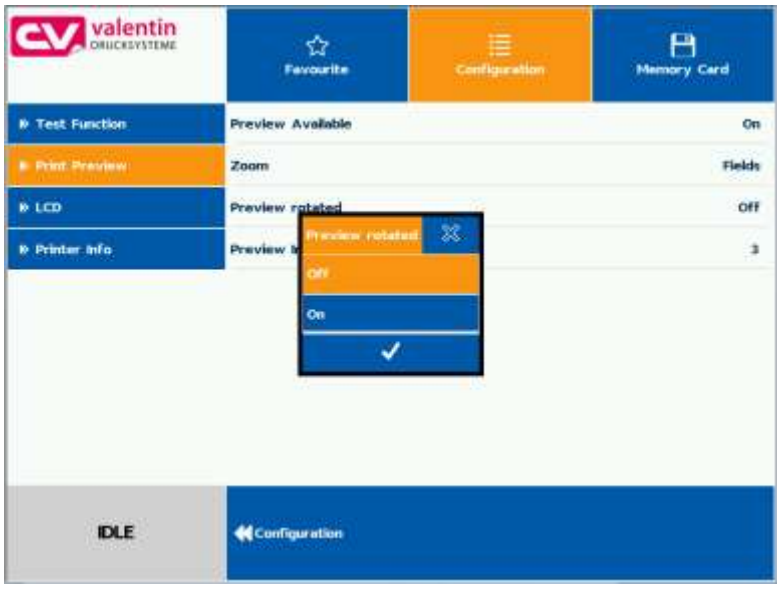
Label: The complete layout is fit to the indication zone.

Fields: Only the print range is fit to the indication zone.

1 .. 8: Manual zoom factor to scale the complete layout down.

Print preview – Preview rotated

The display of label preview can be rotated on the touch-screen display.

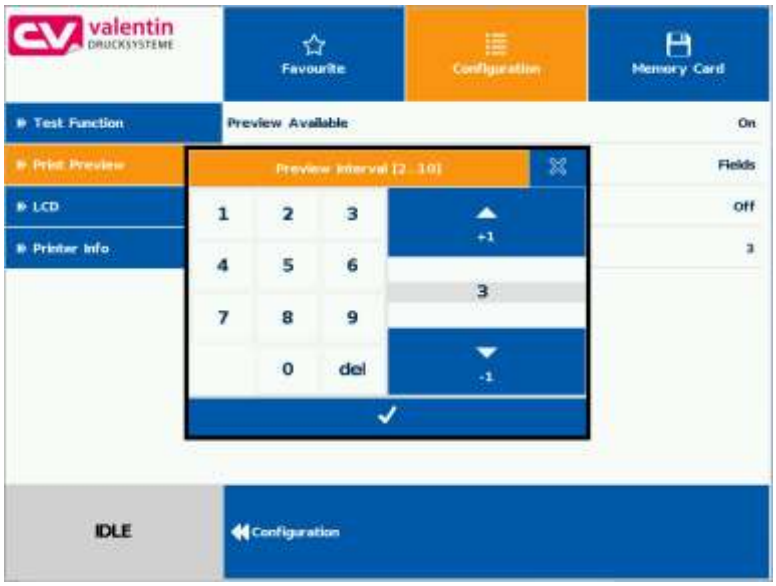


On: The label preview is shown rotated by 180° on the display.

Off: The label preview is represented in read direction.

Print preview – Interval

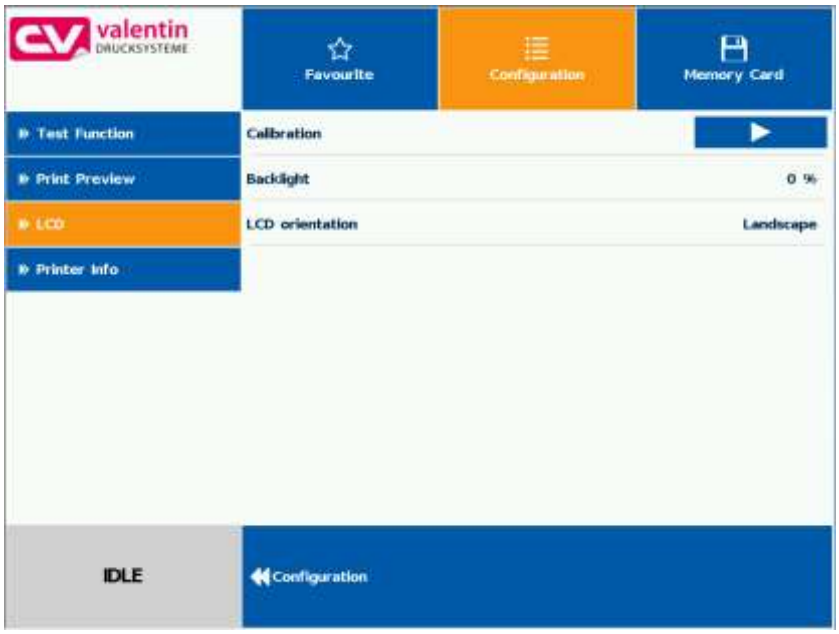
During a running print order the preview is refreshed in the set interval.



Value range: 0 .. 10 seconds

Maintenance - LCD

In the LCD maintenance sector, different parameters to the touch-screeen display can be set.

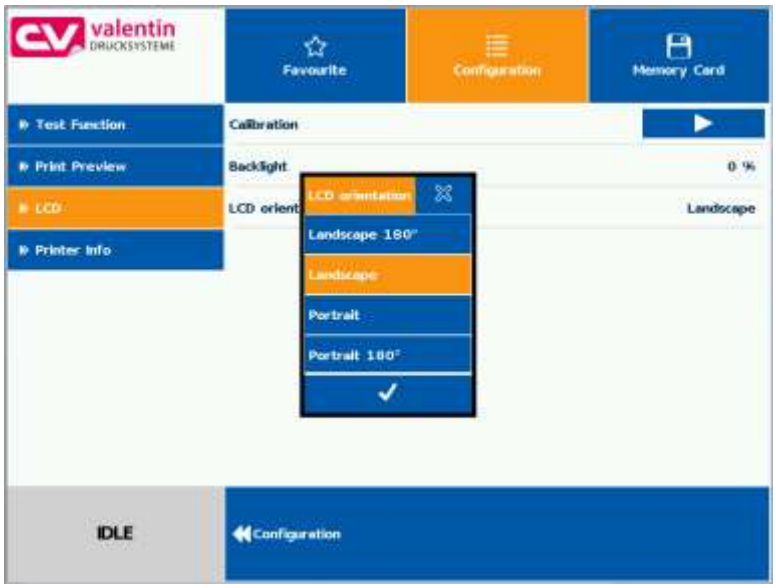


LCD – Backlight

Setting the brightness of background lighting.

Value range: 0 .. 100 %.

LCD - Orientation



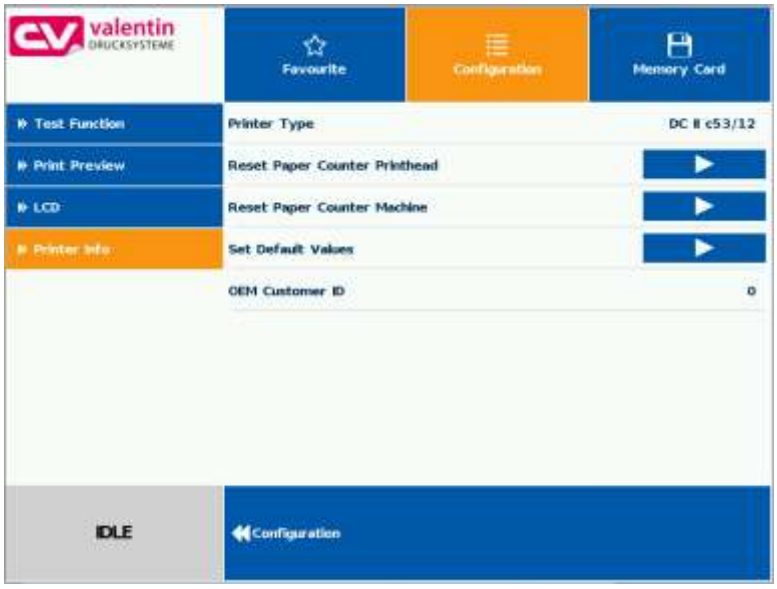
Landscape 180°: The display is represented turned by 180 degres to the function 'Landscape'.

Landscape: The display is represented turned by 90 degres to the reading direction.

Portrait: The display is represented in reading direction.

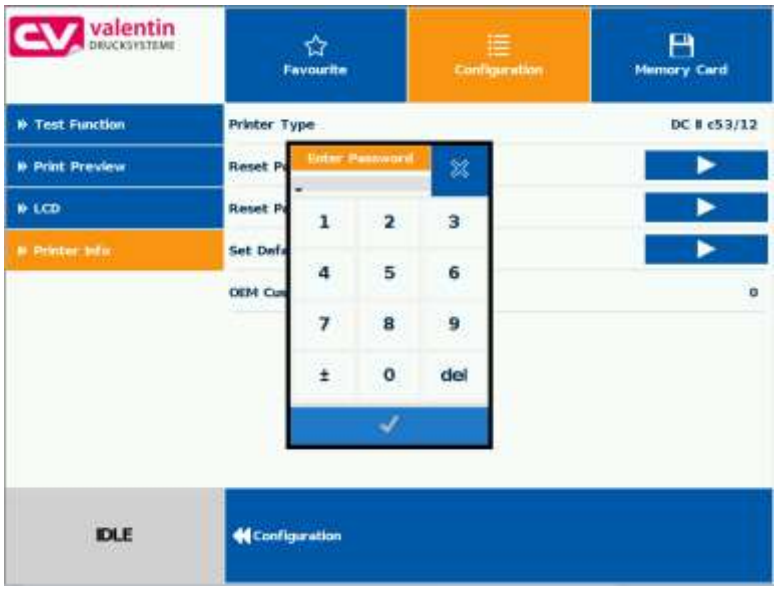
Portrait 180°: The display is represented turned by 180 degres.

Maintenance - System settings



Different system settings such as set printer type, reset paper counter etc. can be made.

However, for the settings the corresponding password is necessary.

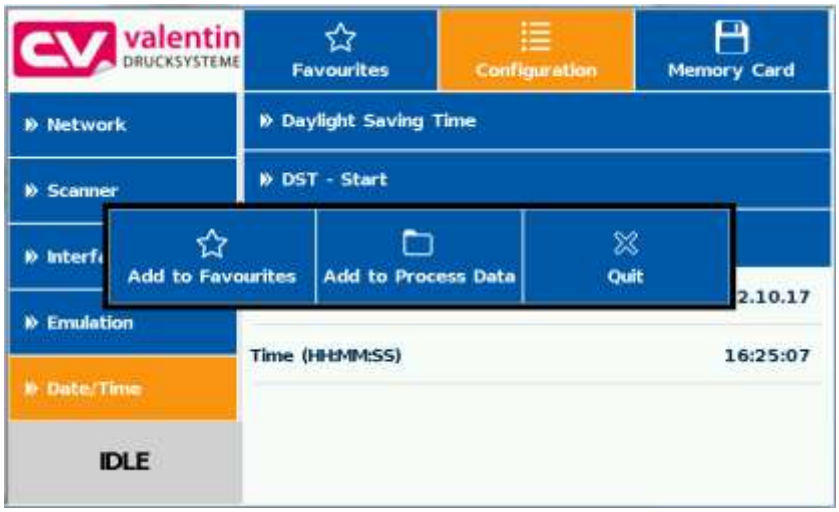


11.8 Process Data

Activation of display for process data

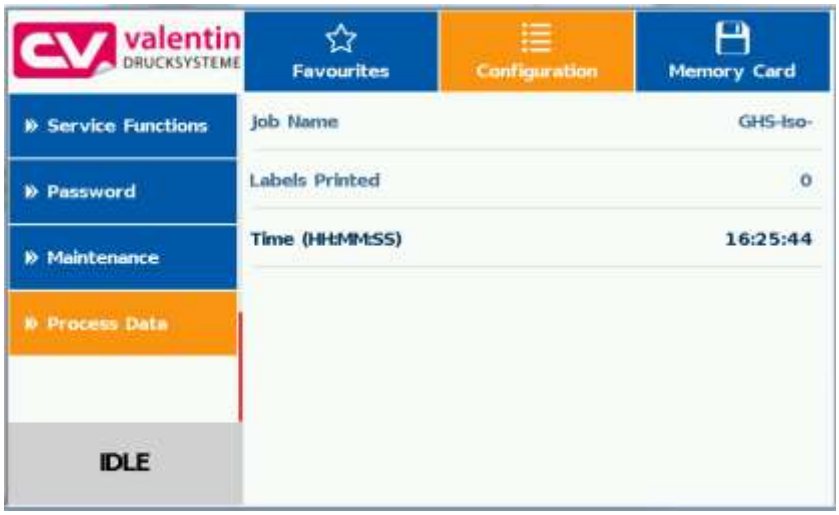
In order to show the process data, the parameter must be activated before in the menu *Maintenance/Print preview*.

Add parameter to process data



Press long (2 s) on a parameter (e.g. current time) to display the appropriate selection.

Press *Add to process data* to add the selected parameter to the process data list.



Remove parameter from process data

Press long (2 s) on a parameter (e.g. current time) to display the appropriate selection. Press *Remove from process data* to remove the selected parameter from the process data list.

Change of display vies Process data – Print preview

With activated print preview, the display shows a picture of the currently printed layout. The change to the process data view is effected by wiping to the right.

With activated print preview on the display a picture of the up-to-date printed layout is shown.

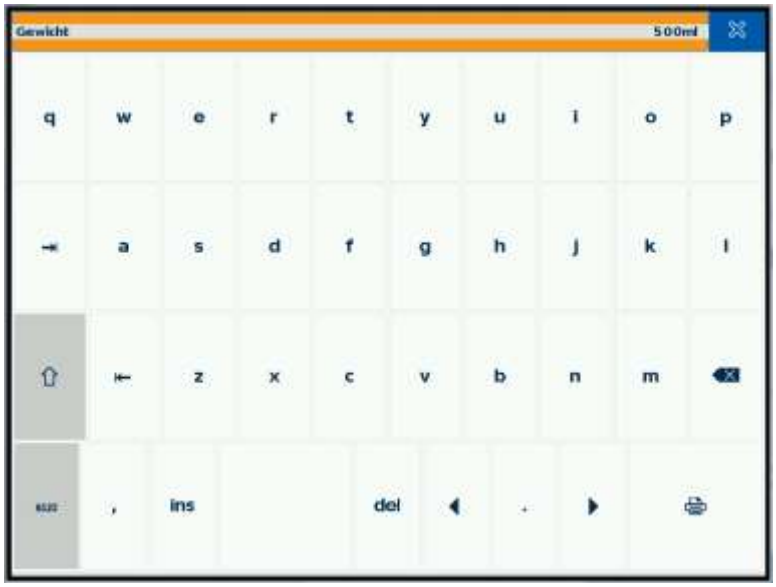
11.9 Memory Menu

Compact Flash Card
USB Stick

On the left side, the content of the currently selected directory is shown one below the other.

The preview zone in on the right side is. If available, the preview of the selected layout is shown.

Load:	The selected layout is loaded. After the number of copies have been entered, the print order is started.
Admininstrative tools:	Switching to the file manager (File Explorer).



The user query can be entered at the cursor position.

Press to change to the input of number of copies.

Number of copies

Enter the number of layouts to be printed.

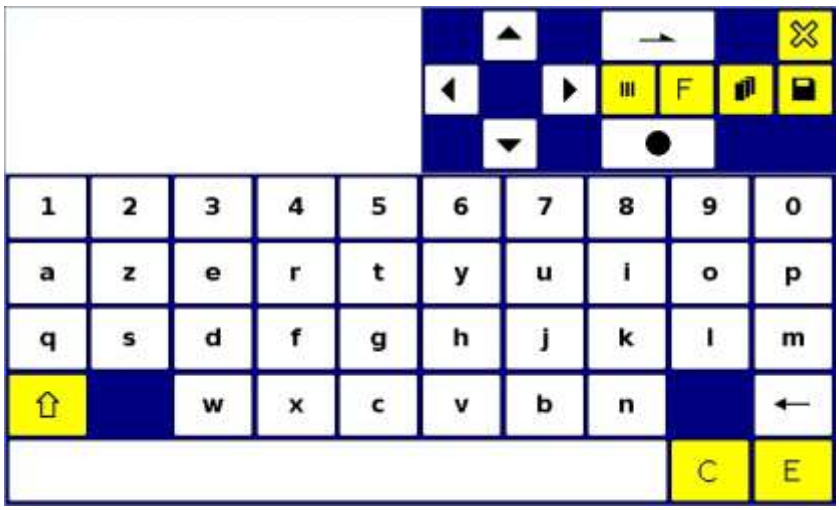
11.10 Information Zone

By pressing the **Info** button the versions of the installed components are displayed.

By pressing the **Info** button once more, the **Home** view is again displayed.

11.11 Change to Foil Keyboard

Press long (> 3 s) on the company logo left above, and the display changes to the indication of a conventionalized foil keyboard. The settings can be done by the standard operating panel (see page **Fehler! Textmarke nicht definiert.**). Press  to change to the previous view.



12 Maintenance and Cleaning

DANGER!

Risk of death by electric shock!

⇒ Before opening the housing cover, disconnect the printing system from the mains supply and wait for a moment until the power supply unit has discharged.

NOTICE!

When cleaning the label printer, personal protective equipment such as safety goggles and gloves are recommended.

Maintenance plan

Maintenance task	Frequency
General cleaning (see chapter 12.1, page 103).	As necessary.
Clean the transfer ribbon roller (see chapter 12.2, page 104).	Each time the transfer ribbon is changed or when the printout is adversely affected.
Clean the printhead (see chapter 12.3, page 104).	Each time the transfer ribbon is changed or when the printout is adversely affected.
Replace the printhead (see chapter 12.4, page 105).	In case of errors in printout.

NOTICE!

The handling instructions for the use of Isopropanol (IPA) must be observed. In the case of skin or eye contact, immediately wash off the fluid thoroughly with running water. If the irritation persists, consult a doctor. Ensure good ventilation.

12.1 General Cleaning

CAUTION!

Abrasive cleaning agents can damage the direct print module!

⇒ Do not use abrasives or solvents to clean the outer surface of the direct print module.

⇒ Remove dust and paper fuzz in the printing area with a soft brush or vacuum cleaner.

⇒ Clean the outer surfaces with an all-purpose cleaner.

12.2 Clean the Transfer Ribbon Roller

A soiled ribbon roller can lead to reduced print quality and can affect transport of material.

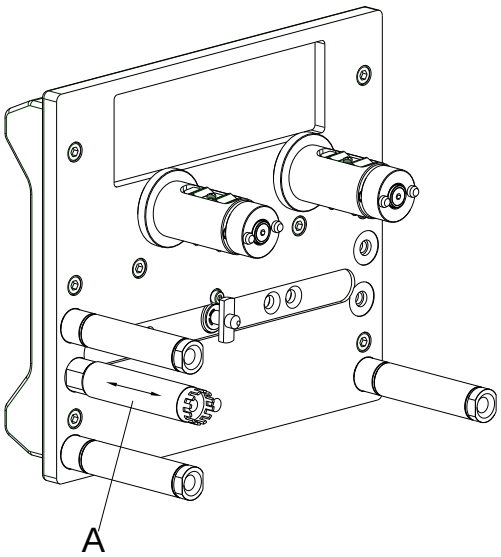


Figure 23

1. Remove the transfer ribbon cassette.
2. Remove deposits with the roller cleaner and a soft cloth.
3. If the roller (A) appears damaged, replace it.

12.3 Clean the Printhead

Printing can cause accumulation of dirt at printhead e.g. by colour particles of transfer ribbon, and therefore it is necessary to clean the printhead in regular periods depending on operating hours, environmental effects such as dust etc.

CAUTION!

Printhead can be damaged!

⇒ Do not use sharp or hard objects to clean the printhead.

⇒ Do not touch protective glass layer of the printhead.

1. Remove the transfer ribbon cassette.
2. Clean the printhead surface with a special cleaning pen or a cotton swab dipped in pure alcohol.
3. Before using the printing system, let the printhead dry for about two to three minutes.

12.4 Replace the Printhead

CAUTION!

The printhead can be damaged by static electricity discharges and impacts!

⇒ Set up the device on a grounded, conductive surface.

⇒ Ground your body, e.g. by wearing a grounded wristband.

⇒ Do not touch the contacts on the plug connections.

⇒ Do not touch the printhead with hard objects or your hands.

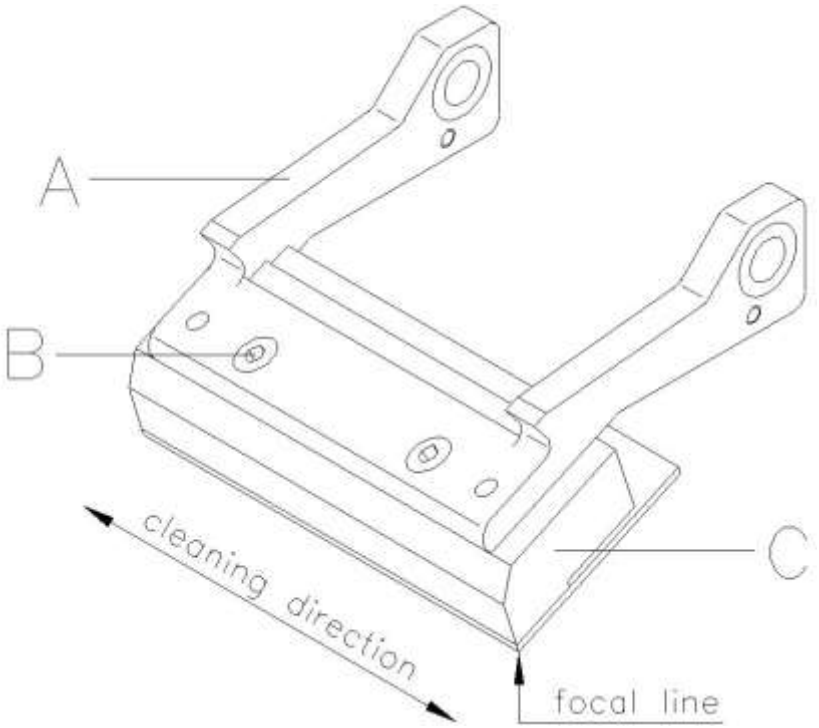


Figure 24

Remove the printhead

1. Remove the ribbon cassette.
2. Move the printhead unit in an appropriate service position.
3. Press the printhead support (A) slightly downwards until an Allen key can be inserted in the screws (B).
4. Remove the screws (B) and afterwards the printhead (C).
5. Remove the rear-mounted connection assembly from the printhead.

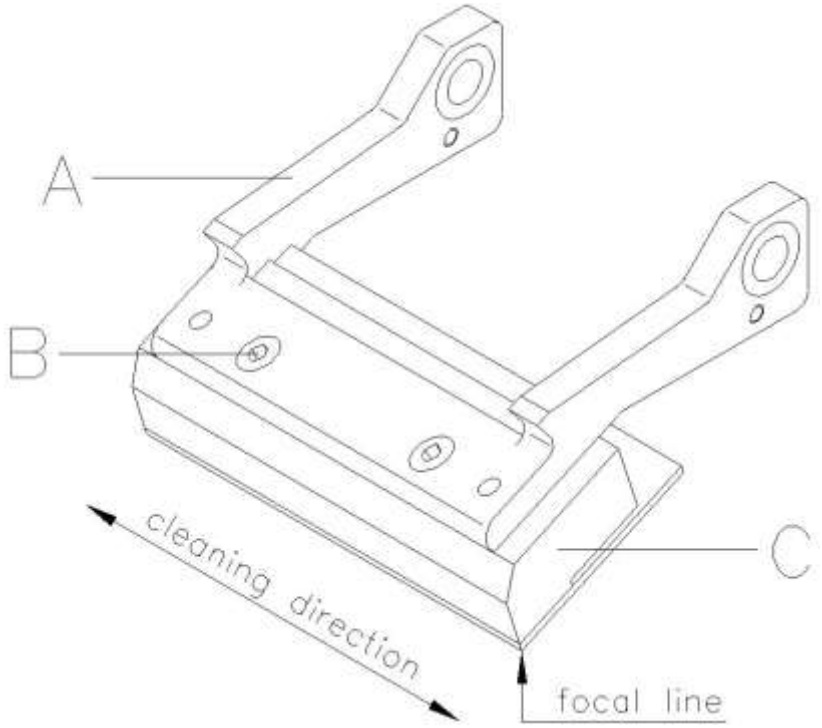


Figure 25

Install the printhead

1. Insert the connection assembly to the new printhead.
2. Position the printhead in the printhead support (A), so the engaging pieces catch in the appropriate holes in the printhead support (A).
3. Hold the printhead holder (A) with a finger slightly on the pressure roll and check the correct position of printhead (C).
4. Screw in the screw (B) and tighten it with an Allen key.
5. Insert again ribbon cassette (see chapter 8, page 43).
6. Enter the resistance value of the new printhead in the menu *Service Functions/Heater resistance*. The value is indicated on the type plate of printhead.
7. Start a test print to check printhead position.

12.5 Angle Adjustment (Intermittent Mode)

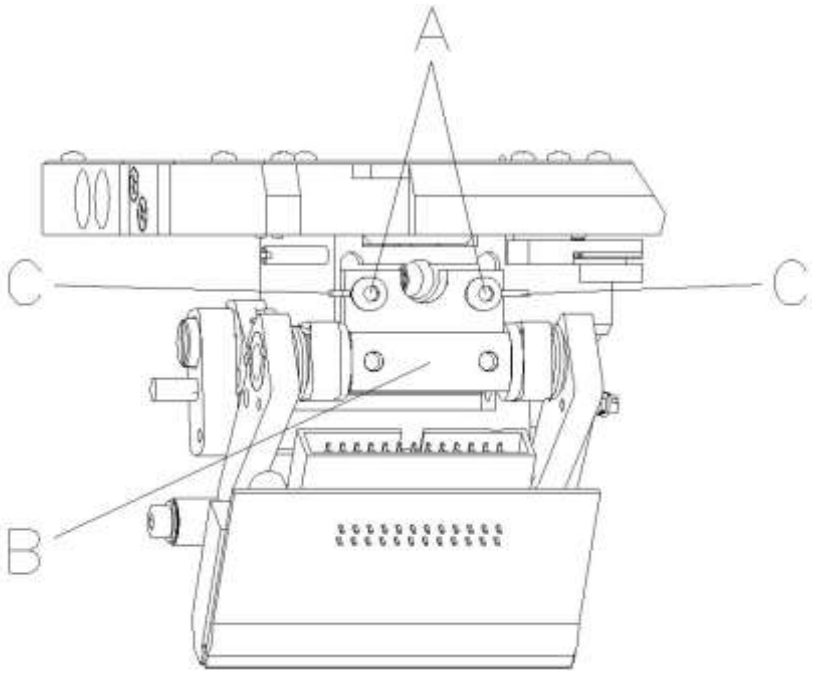


Figure 26

The installation angle of the printhead is default 26° to the print surface. However, manufacturing tolerances of printhead and mechanics can require another angle.

CAUTION!

Damage of printhead by unequal use!
Higher wastage of ribbon by faster ripping.

⇒ Only change the factory settings in exceptional cases.

1. Loosen slightly two Allen head screws (A).
2. Move the adjusting part (B) to adjust the angle between the printhead and the printhead support.
   move downwards = decrease angle
   move upwards = increase angle
3. Tighten again the Allen head screws (A).
4. Start a print order with approx. three layouts to check the correct unwrinkled ribbon run.

NOTICE!

The slots (C) serve for position control. Pay attention to a parallel adjustment.

12.6 Print Quality Optimisation

The following table shows some possibilities to improve the print quality.
Generally you have to note: the higher the print speed the lower the print quality.

Problem	**Mögliche Behebung**
Regular inferior print quality	• Increase the contrast • Increase the pressure • Reduce the print speed • Reduce the transfer ribbon speed • Reduce the distance between the printhead and the print surface • Change the combination of the transfer ribbon and the print medium • Control the print surface (hardness) • Change the printhead angle
Partial inferior print quality (on one side)	• Align the surface parallel to the printhead • Set the regular transfer ribbon tension • Set the regular printhead angle
Partial inferior print quality (periodical)	• Sand and smooth the surface • Reinforce the surface against bending

12.7 Cycle Optimisation (Intermittent Mode)

NOTICE!

The cycle is a finished print cycle per a unit of time.

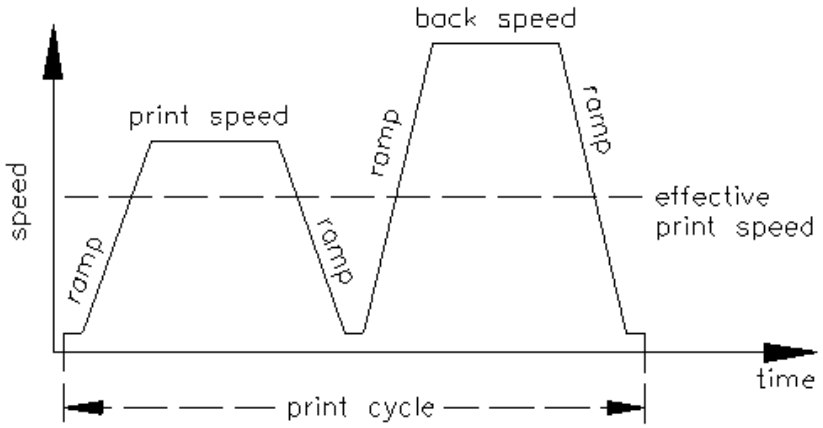


Figure 27

In case of 'time critical' applications you have the possibility with a good selection of different device parameters to increase the effective print speed and it this way the clock cycle.

- Generally increase the print speed.
- Generally increase the back speed.
- Increase the acceleration and brake ramp.
- Change the zero point of the machine.
- Avoid vertical installation position of the print mechanics. Install the machine in horizontal position.
- Control the short distance between the printhead and the print surface.
- Switch off the foil saving automatic.
- Optimise the layout to a short print way, i.e. less blanks, no borders at the top res. bottom, rotate the layout.

13 Signal Diagrams

13.1 Continuous Mode

NOTICE!
The line 'data receipt' indicates when the direct print module receives data.

Dispenser mode: Dynamic

Number of layouts per print order: 1
Data memory: standard
Ribbon saving: On
Trigger input print start: increasing slope

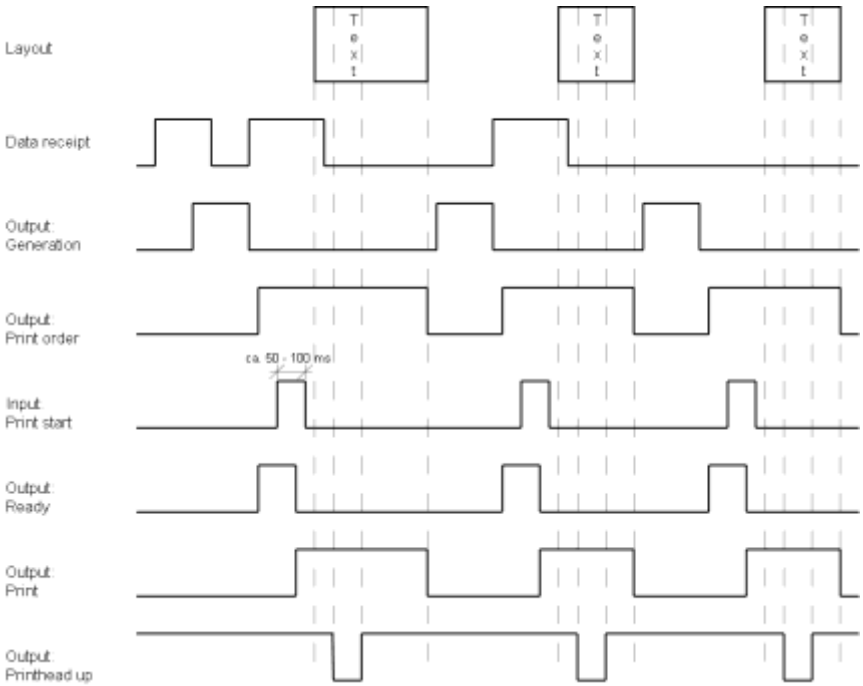


Figure 28

Layout

In 'dispenser mode: dynamic' the layout distance onto the material is not determined by the layout length but by the time between start impulse and print start input.

Because of the fact that the setting 'data memory: standard' the next print order is generated after the previous one is finished and a print order is only finished after the feed of the complete layout, the smallest possible time between two start impulses depends also from the layout length.

In case the printable data is only at the beginning of the layout and the rest of the layout is empty, then the time of start impulse by minimising the layout length (not for 'data memory: extended') can be decreased.

Data receipt

As soon as the generation of a layout is finished, a new one is send to the direct print module. The time of receipt for the first layout is normally shorter because at this time the direct print module has no further action. At receipt of the following layout, the time of receipt is longer because the direct print module receives data and prints at the same time.

Number of layouts per print order: 1
Data memory: extended
Ribbon saving: On
Trigger input print start: increasing slope

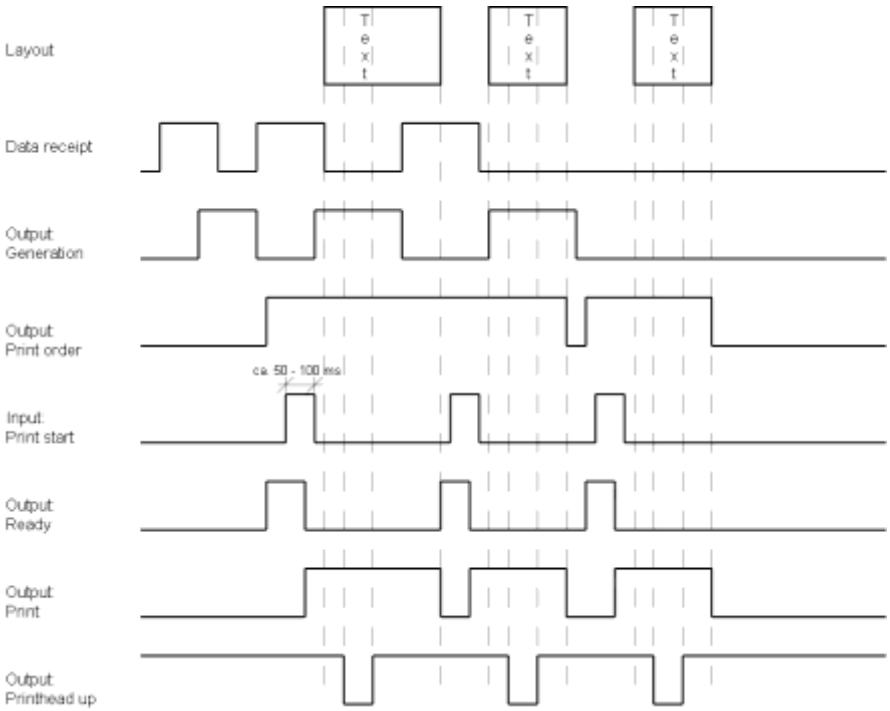


Figure 29

Layout For a better comparison we used the same layouts as before.

Data receipt As soon as the generation of the layout is finished a new one is send to the direct print module.

Data receipt/ generation The time of receipt for the first layout is normally shorter because at this time the direct print module has no further action. At receipt of the following layout, the time of receipt is longer because the direct print module receives data and prints at the same time.

Generation In mode 'data memory: extended' already received data is always generated after the start of a print order.

Print order Before the current print order is finished the next one is already generated. The signal output is therefore active and the next start impulse can be send.

Print Before the next start impulse is send, the print has to be finished as otherwise the impulse is ignored.

Number of layouts per print order: 3
Data memory: Off/standard/extended
Ribbon saving: On
Trigger input print start: increasing slope

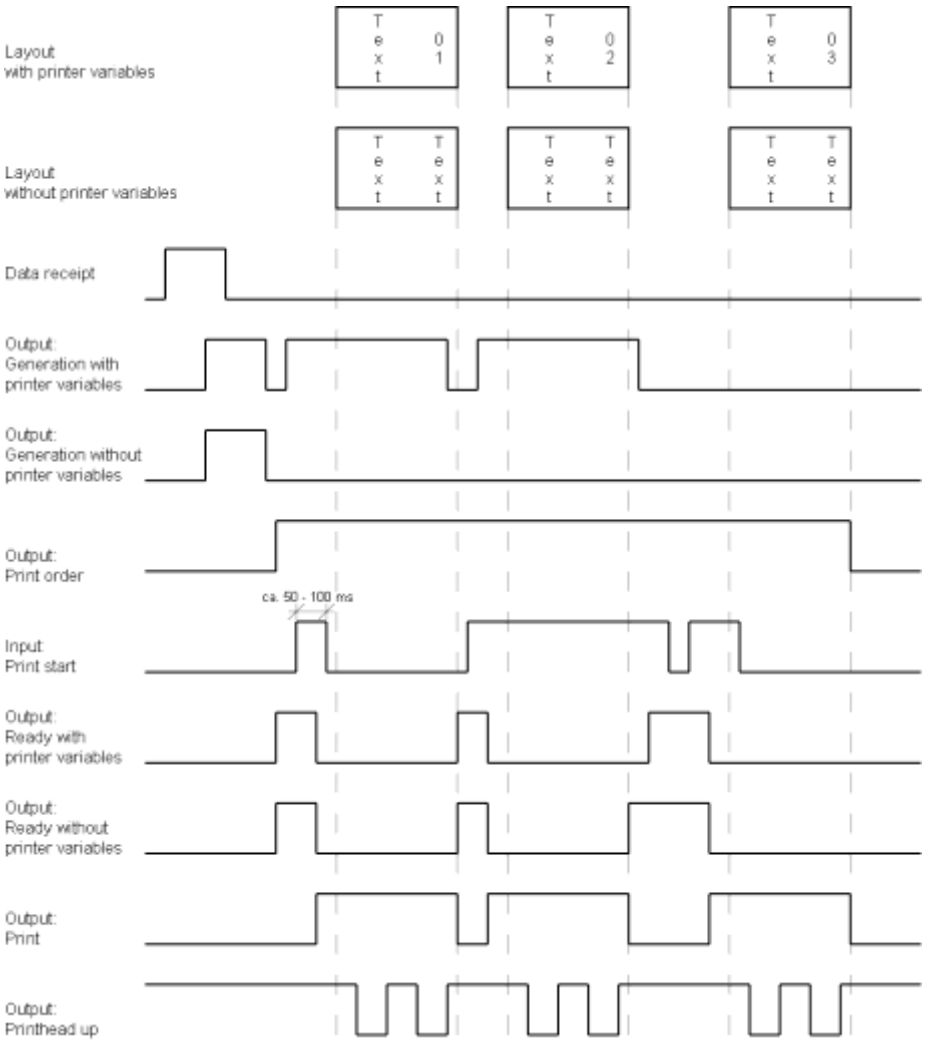


Figure 30

Layout/generation with module variables
The use of printer variables means that each layout is different and the direct print module has to generate several parts of the layout anew, e.g. variable counter.

Layout/generation without module variables
Each of the 3 layouts which are to print are the same and therefore it is only necessary to generate the layout once.

Data receipt
Because only 1 print order is send, the direct print module has only to receive once.

Print order
As the print order consists of 3 layouts, the print order output is active as long as all 3 layouts are printed.

Print start/print
In dispenser mode dynamic only the slope of the start impulse is recognised as valid print start signal. However, the impulse should have a minimum impulse width of 50 ms.

Dispenser Mode: Static

Number of layouts per print order: 4
Data memory: Off/standard/extended
Ribbon saving: On
Trigger input print start: level High

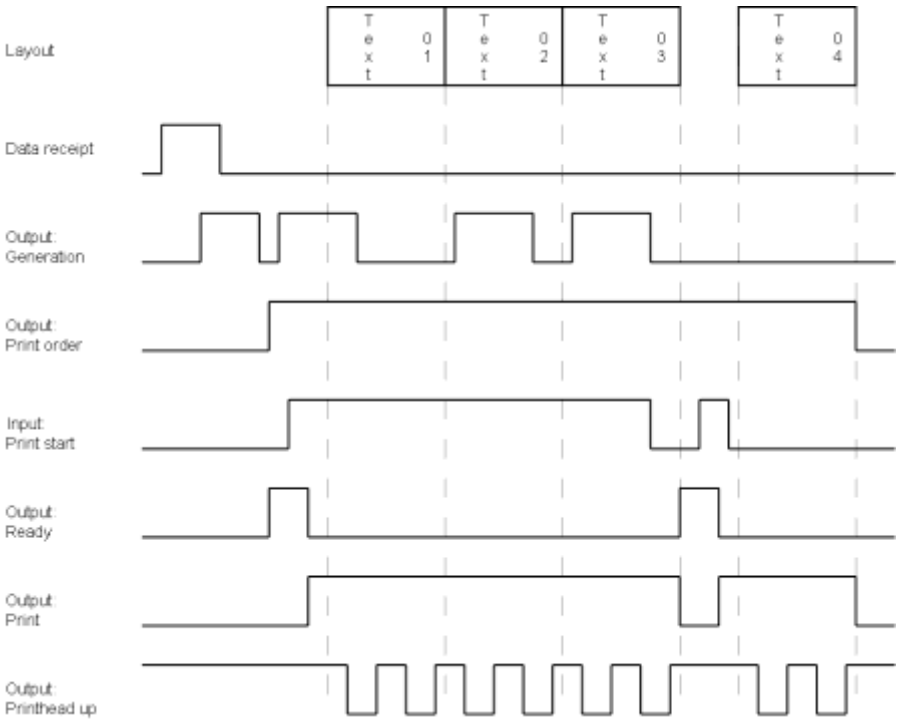


Figure 31

Layout

4 layouts with counter.

Print start/print

In 'dispenser mode: static' the level of the start impulse is recognised as valid start signal. In case the level is activated then the print is continued immediately if the following layout is already generated. After deleting the signal, the machine prints until the end of the current layout and then the direct print module waits for the next start impulse.

13.2 Intermittent Mode

Mode 1 (single item processing)

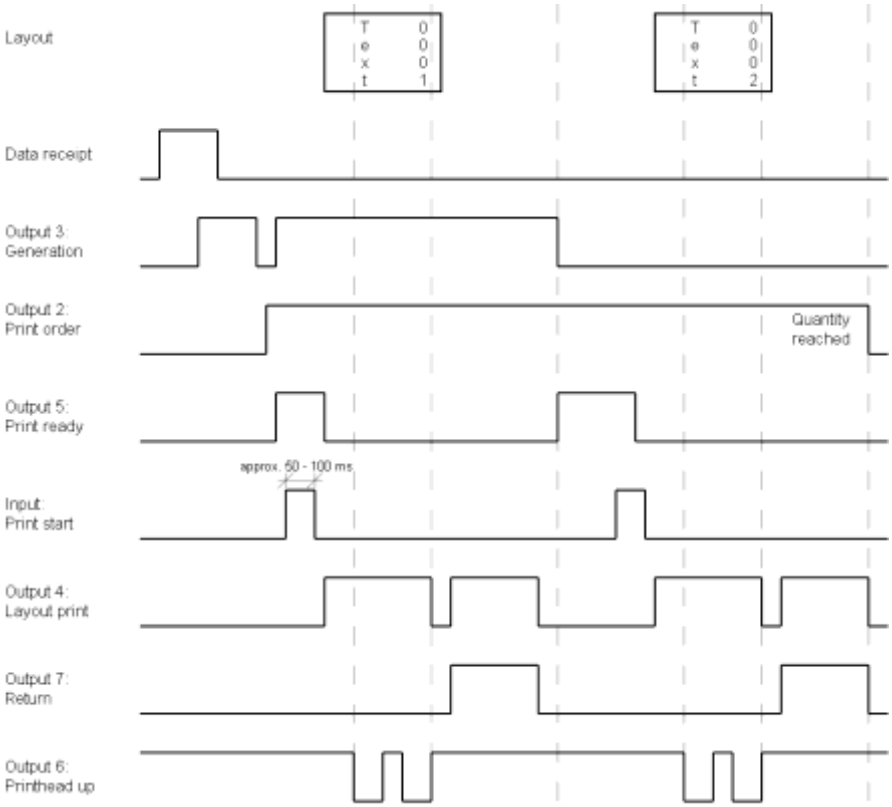


Figure 32

Mode 2 (continuous mode)

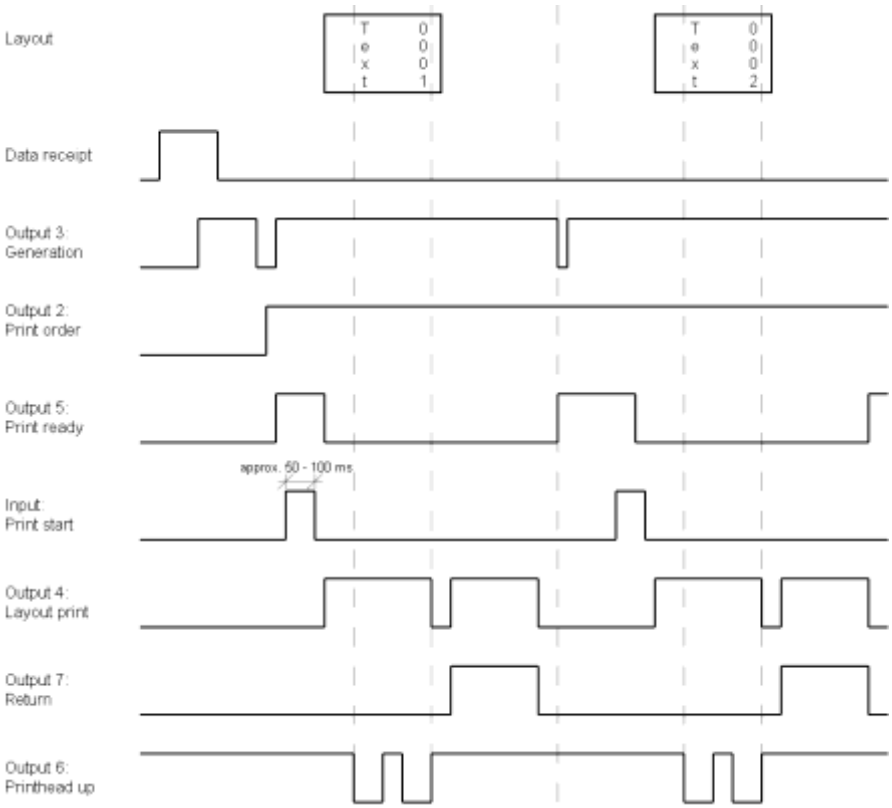


Figure 33

14 Error Correction

Error message	Cause	Remedy
1 Line too high	Line rises up completely or partly over the upper edge of label.	Move line down (increase Y value). Check rotation and font.
2 Line too low	Line rises up completely or partly over the bottom edge of label.	Move line up (reduce Y value). Check rotation and font.
3 Character set	One res. several characters of the text is res. are not available in the selected font.	Change text. Change font.
4 Unknown BC type	Selected code is not available.	Check code type.
5 Illegal rotation	Selected rotation is not available.	Check rotation.
6 CV font	Selected font is not available.	Check font.
7 Vector font	Selected font is not available.	Check font.
8 Measuring label	While measuring no label was found. Set label length is too large.	Check label length and if labels are inserted correctly. Restart measuring anew.
9 No label found	No label available. Soiled label photocell. Labels not inserted correctly.	Insert new label roll. Check if labels are inserted correctly. Clean the label photocell.
10 No ribbon	During the print order the ribbon roll becomes empty. Defect at the transfer ribbon photocell.	Change transfer ribbon. Check transfer ribbon photocell (service functions).
11 COM FRAMING	Stop bit error.	Check stop bits. Check baud rate. Check cable (printer and PC).
12 COM PARITY	Parity error.	Check parity. Check baud rate. Check cable (printer and PC).
13 COM OVERRUN	Loss of data at serial interface (RS-232).	Check baud rate. Check cable (printer and PC).

Error message	Cause	Remedy
14 Field number	Received line number is invalid.	Check sent data. Check connection PC - printer.
15 Length mask	Invalid length of received mask statement.	Check sent data. Check connection PC - printer.
16 Unknown mask	Transferred mask statement is invalid.	Check sent data. Check connection PC - printer.
17 Missing ETB	No end of data found.	Check sent data. Check connection PC - printer.
18 Invalid character	One res. several characters of the bar code is res. are not valid.	Change bar code data. Change font.
19 Invalid statement	Unknown transferred data record.	Check sent data. Check connection PC - printer.
20 Invalid check digit	For check digit control the entered res. received check digit is wrong.	Calculate check digit anew. Check code data.
21 Invalid SC code	Selected SC factor is invalid for EAN res. UPC.	Check SC factor.
22 Invalid number of digits	Entered digits for EAN res. UPC are invalid < 12; > 13.	Check number of digits.
23 Type check digit	Selected check digit calculation is not available in the bar code.	Check calculation of check digit. Check bar code type.
24 Invalid extension	Selected zoom factor is not available.	Check zoom factor.
25 Offset sign	Entered sign is not available.	Check offset value.
26 Offset value	Entered offset value is invalid.	Check offset value.
27 Printhead temperature	Printhead temperature is too high. Defective printhead sensing device.	Reduce contrast. Change printhead.
28 Cutter error	With cut an error occurred. Paper jam.	Check label run. Check cutter run.
29 Invalid parameter	Entered data do not correspond to the characters allowed from the application identifier.	Check code data.

Error message	Cause	Remedy
30 Application Identifier	Selected application identifier is not available in GS1-128.	Check code data.
31 HIBC definition	Missing HIBC system sign. Missing primary code.	Check definition of HIBC code.
32 System clock	Real Time Clock function is selected but the battery is empty. Defective RTC.	Change battery. Change RTC component.
33 No CF interface	Interrupted connection CPU - CF card. Defective CF card interface.	Check connection CPU - CF card interface. Check CF card interface.
34 No print memory	Not enough print memory available.	Check CF assembly on CPU.
35 Printhead open	At start of a print order the printhead is open.	Close the printhead and start print order anew.
36 BCD invalid format	BCD error Invalid format for the calculation of Euro variable.	Check entered format.
37 BCD overflow	BCD error Invalid format for the calculation of Euro variable.	Check entered format.
38 BCD division	BCD error Invalid format for the calculation of Euro variable.	Check entered format.
39 FLASH ERROR	Flash component error.	Run a software update. Change CPU.
40 Length command	Invalid length of the received command statement.	Check data sent. Check connection PC - printer.
41 No drive	CF card not found / not correctly inserted.	Insert CF card correctly.
42 Drive error	Impossible to read CF card (faulty).	Check CF card, if necessary change it.
43 Unformatted	CF Card not formatted.	Format CF card.
44 Delete directory	Attempt to delete the actual directory.	Change directory.
45 Invalid path	Too long indication of path.	Indicate a shorter path.

Error message	Cause	Remedy
46 Drive write-protected	Memory card is write-protected.	Deactivate write protection.
47 Directory not file	Attempt to indicate a directory as file name.	Correct your entry.
48 File already open	Attempt to change a file during an access is active.	Select another file.
49 No file/directory	File does not exist on CF card.	Check file name.
50 Invalid file name	File name contains invalid characters.	Correct entry of name, remove special characters.
51 Internal file error	Internal file system error.	Please contact your distributor.
52 Root full	The max. number (64) of main directory entries is reached.	Delete at least one main directory entry and create subdirectories.
53 Drive full	Maximum CF capacity is reached.	Use new CF Card, delete no longer required files.
54 File/directory exists	The selected file/directory already exists.	Check name, select a different name.
55 File too large	During copying procedure not enough memory space onto target drive available.	Use a larger target card.
56 No update file	Errors in update file of firmware.	Start update file anew.
57 Invalid graphic file	The selected file does not contain graphic data.	Check file name.
58 Directory not empty	Attempt to delete a not empty directory.	Delete all files and sub-directories in the desired directory.
59 No CF interface	No CF card drive found.	Check connection of CF card drive. Contact your distributor
60 No media	No CF card is inserted.	Insert CF card in the slot.
61 Webserver error	Error at start of web server.	Please contact your distributor.
62 Wrong PH FPGA	The direct print module is equipped with the wrong FPGA.	Please contact your distributor.
63 End position	The label length is too long. The number of labels per cycle is too much.	Check label length res. the number of labels per cycle.

Error message	Cause	Remedy
64 Zero point	Defective photocell.	Change photocell.
65 Compressed air	Pressure air is not connected.	Check pressure air.
66 External release	External print release signal is missing.	Check input signal.
67 Column too wide	Wrong definition of column width res. number of columns.	Reduce the column width res. correct the number of columns.
68 Scanner	The connected bar code scanner signals a device error.	Check the connection scanner/printer. Check scanner (dirty).
69 Scanner NoRead	Bad print quality. Printhead completely soiled or defective. Print speed too high.	Increase contrast. Clean printhead or replace (if necessary). Reduce print speed.
70 Scanner data	Scanned data does not correspond to the data which is to print.	Replace printhead.
71 Invalid page	As page number either 0 or a number > 9 is selected.	Select a number between 1 and 9.
72 Page selection	A page which is not available is selected.	Check the defined pages.
73 Undefined page	The page is not defined.	Check the print definition.
74 Format user guiding	Wrong format for customized entry.	Check the format string.
75 Format date/time	Wrong format for date/time.	Check the format string.
76 Hotstart CF	No CF card found.	If option hotstart was activated, a CF card must be inserted. Switch off the printer before inserting the memory card.
77 Flip/Rotate	Selection of print of several columns and also mirror/rotate.	It is only possible to select one of both functions.
78 System file	Loading of temporary hotstart files.	Not possible.
79 Shift variable	Faulty definition of shift times (overlapping times).	Check definition of shift times.
80 GS1 Databar	General GS1 Databar error.	Check definition and parameter of GS1 Databar code.
81 IGP error	Protocol error IGP.	Check sent data.

Error message	Cause	Remedy
82 Time generation	Printing creation was still active at print start.	Reduce print speed. Use printers' output signal for synchronization. Use bitmap fonts to reduce generating time.
83 Transport protection	Both DPM position sensors (start/end) are active.	Displace zero point sensor Check sensors in service functions menu
84 No font data	Font and web data is missing.	Run a software update.
85 No layout ID	Layout ID definition is missing.	Define layout ID onto the label.
86 Layout ID	Scanned data does not correspond to defined ID.	Wrong label loaded from CF card.
87 RFID no label	RFID unit cannot recognize a label.	Displace RFID unit or use an offset.
88 RFID verify	Error while checking programmed data.	Faulty RFID label. Check RFID definitions
89 RFID timeout	Error at programming the RFID label.	Label positioning. Faulty label.
90 RFID data	Faulty or incomplete definition of RFID data.	Check RFID data definitions.
91 RFID tag type	Definition of label data does not correspond with the used label.	Check storage partitioning of used label type
92 RFID lock	Error at programming the RFID label (locked fields).	Check RFID data definitions. Label was already programmed.
93 RFID programming	Error at programming the RFID label.	Check RFID definitions.
94 Scanner timeout	The scanner could not read the bar code within the set timeout time. Defective printhead. Wrinkles in transfer ribbon. Scanner wrong positioned. Timeout time too short.	 Check printhead. Check transfer ribbon. Position scanner correctly, corresponding to the set feeding. Select longer timeout time.

Error message	Cause	Remedy
95 Scanner layout difference	Scanner data does not correspond to bar code data.	Check adjustment of scanner. Check scanner settings / connection.
96 COM break	Serial interface error.	Check settings for serial data transmission as well as cable (printer-PC).
97 COM general	Serial interface error.	Check settings for serial data transmission as well as cable (printer-PC).
98 No software printhead FPGA	No printhead-FPGA data available.	Please contact your responsible distributor.
99 Load software printhead FPGA	Error when programming printhead-FPGA.	Please contact your responsible distributor.
100 Upper position	Option applicator Sensor signal up is missing.	Check input signals / compressed-air supply.
101 Lower position	Option applicator Sensor signal down is missing.	Check input signals / compressed-air supply.
102 Vacuum plate empty	Option applicator Sensor does not recognize a label at vacuum plate.	Check input signals / compressed-air supply.
103 Start signal	Print order is active but device not ready to process it.	Check start signal.
104 No print data	Print data outside the defined label. Selection of wrong module type (design software).	Check selected module type. Check selection of left/right version.
105 Printhead	No original printhead is used.	Check the used printhead. Contact your distributor.
106 Invalid Tag type	Wrong Tag type. Tad data do not match the Tag type in the printer.	Adapt data or use the correct Tag type.
107 RFID inactive	RFID module is not activated. No RFID data can be processed.	Activate RFID module or remove RFID data from label data.
108 GS1-128 invalid	Transferred GS1-128 bar code is invalid.	Verify bar code data (see GS1-128 bar code specification).
109 EPC parameter	Error at EPC calculation.	Verify data (see EPC specification).

Error message	Cause	Remedy
110 Housing open	When starting the print order the housing cover is not closed.	Close the housing cover and start the print order anew.
111 EAN.UCC code	Transferred EAN.UCC code is invalid.	Verify bar code data (see corresponding specification).
112 Print carriage	Printing carriage does not move.	Check gear belt (possibly broken).
113 Applicator error	Option applicator Error while using applicator.	Check applicator.
114 Left position	Option applicator Left final position switch is not in correct position.	Check LEFT final position switch for correct function and position. Check function of pneumatics for cross traverse.
115 Right position	Option applicator Right final position switch is not in correct position.	Check RIGHT final position switch for correct function and position. Check function of pneumatics for cross traverse.
116 Print position	Option applicator: The applicator is not in the print position when trying to print a label.	Check TOP and RIGHT final position switch for correct function and position. Check pneumatics for function
117 XML parameter	The parameters in the XML file are not correct.	Please contact your responsible distributor.
118 Invalid variable	Transferred variable is invalid with customized entry.	Select correct variable without customized entry and transfer it.
119 No ribbon	During the print order the ribbon roll becomes empty. Defect at the transfer ribbon photocell.	Change transfer ribbon. Check transfer ribbon photocell (service functions).
120 Wrong directory	Invalid target directory when copying.	Target directory must not be within the source directory. Check target directory.
121 No label PH2	No label found at the rear printhead (DuoPrint). Soiled label photocell. Labels not inserted correctly.	Insert new label roll. Clean the label photocell. Check if labels are inserted correctly.
122 IP occupied	The IP address was already assigned.	Assign a new IP address.

Error message	Cause	Remedy
123 Print asynchronous	The label photocell does not work in the order as it is expected according to print data.	Check label size and gap size.
	The settings of the photocell are not correct.	Check label photocell settings.
	Settings of label size and gap size are not correct.	Check correct loading of label material.
	No label found at the rear printhead.	Insert new label roll.
	Soiled label photocell.	Clean the label photocell.
	Labels not inserted correctly.	Check if labels are inserted correctly.
124 Speed too low	The print speed is too slow.	Increase the speed of customers' machine.
125 DMA buffer	Communication problem HMI.	Restart the printer.
126 UID conflict	Configuration RFID programming faulty.	Run RFID initialising.
127 Module not found	RFID module not available.	Check the RFID module connection. Please contact your responsible distributor.
128 No release signal	No print release by higher-level control (customer machine).	Activate release signal at the higher-level control.
129 Wrong firmware	Firmware does not match the used printer type.	Use firmware that fits to the printer type. Please contact your responsible distributor.
130 Language missing	Language file for the set printer language is not available.	Please contact your responsible distributor.
131 Wrong material	Label material does not fit to printing data.	User label material with suitable label and/or gap length.
132 Invalid mark-up tag	Invalid mark-up formatting characters in text.	Correct the formatting characters in the text.
133 Script not found	LUA script file not found.	Check the file name.
134 Script failure	LUA script is incorrect.	Check the script.

Error message	Cause	Remedy
135 Script user error	Error in LUA script user input.	Correct the input value.
136 No reprint available	No label data for reprinting available.	Send new label data to the printer.
137 Printhead short circuit	Electrical short at the printhead.	Check the used printhead. Please contact your distributor.
138 Too less ribbon	Transfer ribbon ends.	Change transfer ribbon.
139 Hardware error	A hardware component could not be found.	Please contact your responsible distributor.

15 Additional Information

15.1 Hotstart

NOTICE!

The data is saved onto CF card. Therefore the CF card is a condition for the *Hotstart* menu item.

The function *Hotstart* contains e.g. that in case of a power failure the currently loaded layout can be further processed without any loss of data. Moreover a print order can be interrupted and to be continued after switching on the direct print module anew.

NOTICE!

At an active *Hotstart* all necessary data is stored on the CF card therefore do not remove the card during operation. When removing during operation, this causes the loss of all data on the CF card.

Save current layout

In case the *Hotstart* function is set to on, at the start of a print order the data of the current layout is saved to the corresponding directory of the CF card.
However the following conditions have to be fulfilled:

- CF card inserted in drive A.
- CF card not write-protected.
- Enough free storage space onto CF card.

An error message appears in case these conditions are not fulfilled.

Save print order state

At switching off the direct print module the state of the current print order is saved to the corresponding directory of the CF card.
However the following conditions have to be fulfilled:

- CF card inserted in drive A.
- CF card not write-protected.
- Enough free storage space onto CF card.

Load layout and print order state

When restarting the direct print module (if the function *Hotstart* is activated) the saved layout data and the status of print order were loaded from the corresponding file on the CF card. Because of this reason, when switching on the direct print module a CF card has to be inserted in the appropriate drive. If the data cannot be loaded an error message appears.

Start print order

In case at switching off the direct print module a print order was active, then a print start is released automatically and the required res. actual number of printed layouts is refreshed. In case the print order was stopped at switching off the direct print module, it is again set to the stopped mode after switching on the direct print module anew. In case a customized entry was active during switching off the direct print module, the window for the first customized variable is displayed.

Refresh variable counter

As in the intended file only the start values of the counter are saved, they are refreshed at a new start of the print order by means of the number of printed layouts. Each counter is counted corresponding from its start value. Afterwards the position of the current and the next counter update are correctly set by means of the update intervals.

NOTICE

Make sure that in case graphics are onto the layout they have to be saved onto CF card.

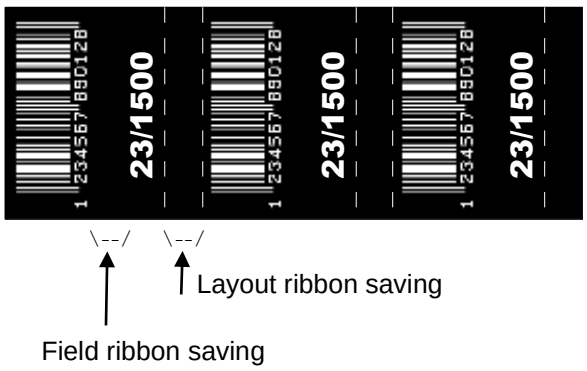
16 Ribbon Saving / Foil Saving

16.1 Explication

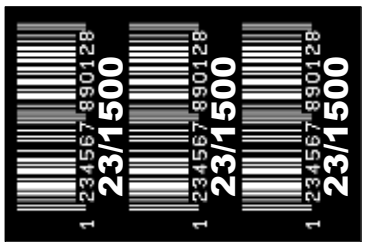
Ribbon saving = maximum utilisation of transfer ribbon

Layout

Transfer ribbon without ribbon saving



Transfer ribbon with ribbon saving



Procedure

In principle the ribbon saving is achieved by the way that the transfer ribbon in phases in those no printing is effected stopped or decelerated. If sufficient time is available, the transfer ribbon which was not used for printing can be retracted to print on it afterwards. The possibilities of ribbon saving and in this way of the print quality are to be connected with the available time which is needed for decelerating and accelerating of transfer ribbon.
There are two different types of ribbon saving:

Field ribbon saving

It is tried to save transfer ribbon with gaps within the layout. Because of the fact that the gaps are usually very small, only little time is available. Therefore a feedback is not reasonable (lack of time).

Layout ribbon saving

The gaps between the layouts are optimised. Usually more time is available here. The loss of transfer ribbon between the layouts which result from accelerating and decelerating of transfer ribbon can be corrected by means of the return.

16.2 Standard Ribbon Saving (Continuous Mode)

16.2.1 Mode

Ribbon saving mode Select ribbon saving mode *Standard*.

Max. print speed Determination of max. print speed.
On the base of this value all necessary calculations e.g. feedback distance and smallest possible print offset are being calculated.

Example

Speed = 400 Mode = Standard	Very good ribbon saving result between 50 mm/s and 400 mm/s.

However, if you print with a speed higher than 400 mm/s, then the ribbon saving result is decreased and/or the ribbon saving can no longer be executed, because the back-feed way was designed to 400 mm/s.

Please consider: if speed is set to 400 and only 300 mm/s are printed, then a smaller number of cycles is reached as if speed is set to 300, however a reserve of 100 mm/s is still available.

Therefore the speed value should be always set to the maximum print speed. If the number of cycles is not sufficient, the rewind correction should be applied.

16.2.2 Mode Parameters

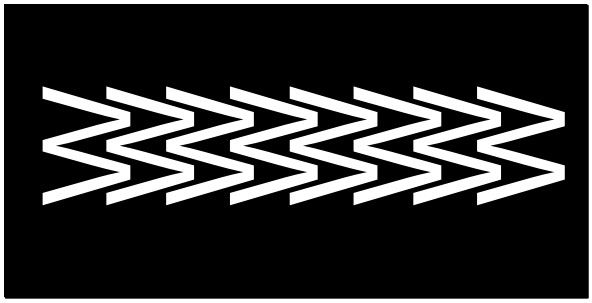
Ribbon correction

0 mm = It is always so far retracted that an optimal ribbon saving is reached (no loss of transfer ribbon). This is rather rarely realised, as the ribbon position can deviate because of inaccuracies at speed measurement (encoder).
Default: -1 mm

−xx mm = The feedback can be made smaller. It causes loss of transfer ribbon but the number of cycles is increased. If the value is increased to the complete backfeed length then the direct print module sets automatically the max. value and no more backfeed is accomplished.

+xx mm = The feedback can be made larger. This causes that it is printed onto the transfer ribbon in the previous printout.

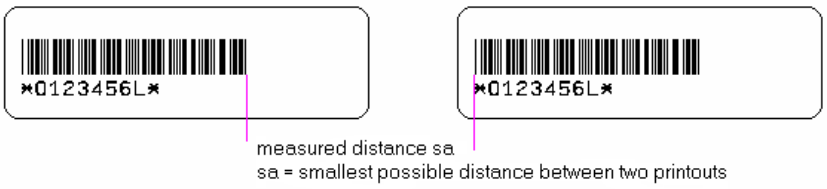
Example



16.2.3 Print Performance Information

Min. distance between prints

The smallest possible distance of two prints with full ribbon saving (the print offset must be set to the minimum value). As basis for the calculation the set ribbon saving parameters are used, as well as mode and especially the indicated max. print speed.



Max. number of cycles

Max. number of cycles per minute.

Ribbon Utilization

Indicates the loss of ribbon saving, i.e. how many mm transfer ribbon is effectively lost.

16.2.4 Expert Parameters

Printhead down time

This is used from ribbon saving algorithm for the calculation of start time of printhead downwards movement.

Ribbon motor early start time

This value is added to the acceleration time of transfer ribbon movement. Time indication for the time between 'motor reached material speed' and 'printhead burns'.
If the same value is entered as for PhDownT, the printhead upwards movement is not started before the transfer ribbon motor reached the material speed.

Min. print speed	If the min. print speed is increased, the max. number of cycles is also increased.
Printhead valve react time	It is calculated when the printhead upwards movement is started.
Field ribbon saving mode	**Off:** Field ribbon saving mode Off. **PHOnly:** Only the printhead is moved. The transfer ribbon is not stopped. **Normal:** Field ribbon saving is executed only if the transfer ribbon motor is completely stopped. **Strong:** Field ribbon saving is executed, even if the transfer ribbon motor is not stopped.
Ribbon saving priority	If the measured speed fluctuation of the material exceeds the processing capability of the printing system, either the optimisation may be reduced, or the print position shifted.
Save start in normal mode	The "SaveStrt" optimisation mode already exists. If a start signal is active during an active print, the transfer ribbon transport is controlled in such a way that the next layout is printed directly after completion of offset travel of the last start signal. To achieve this, however, an optimisation with transfer ribbon retraction is not possible. To enable a start signal during printing with retraction, this option can be enabled. In this case, however, sufficient print offset for transfer ribbon retraction must be ensured.
Ignore empty lines	In the default operation, the printing system stops for the entire layout length until a new layout can be printed, even if the layout is mainly empty. As some label programs do not provide any layout length, issues may occur in connection with the number of cycles, as the layout length remains constant despite varying lengths of the range to be printed. With this option, all empty lines can be ignored in the beginning, at the end or both.

16.3 Shift Ribbon Saving (Continuous Mode)

16.3.1 Mode

Ribbon saving mode Select ribbon saving mode *Shift*.

Max. print speed Determination of max. print speed.
On the base of this value all necessary calculations e.g. feedback distance and smallest possible print offset are being calculated.

Example

Speed = 400
Mode = Standard

Very good ribbon saving result between 50 mm/s and 400 mm/s.

However, if you print with a speed higher than 400 mm/s, then the ribbon saving result is decreased and/or the ribbon saving can no longer be executed, because the back-feed way was designed to 400 mm/s.

Please consider: if speed is set to 400 and only 300 mm/s are printed, then a smaller number of cycles is reached as if speed is set to 300, however a reserve of 100 mm/s is still available.

Therefore the speed value should be always set to the maximum print speed. If the number of cycles is not sufficient, the rewind correction should be applied.

16.3.2 Shift Ribbon Saving Parameters

X-Shift Indication of displacement of the printout in X direction. The printout can be displaced by the entry of a positive or negative value in both directions.

Y-Shift Indication of displacement of the printout in printing direction. Enter value 0 in order to achieve a print result in which the columns are arranged side by side on the transfer ribbon.

Lane repeats Indication of number of lanes printed side by side.

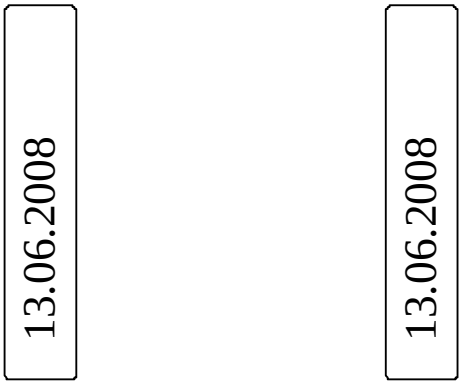
Lane Repeat Shift Indication of distance when changing to a new lane.

Example

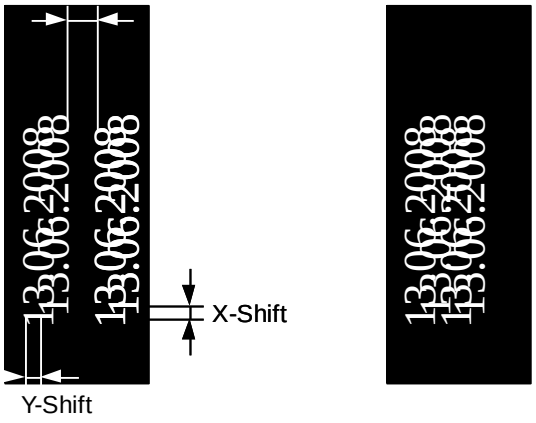
X-Shift: 2 mm; Y-Shift: −3 mm
Lanes: 2; R-Shift: −5

X-Shift: 2 mm; Y-Shift: −3 mm
Lanes: 2; R-Shift: +3 mm

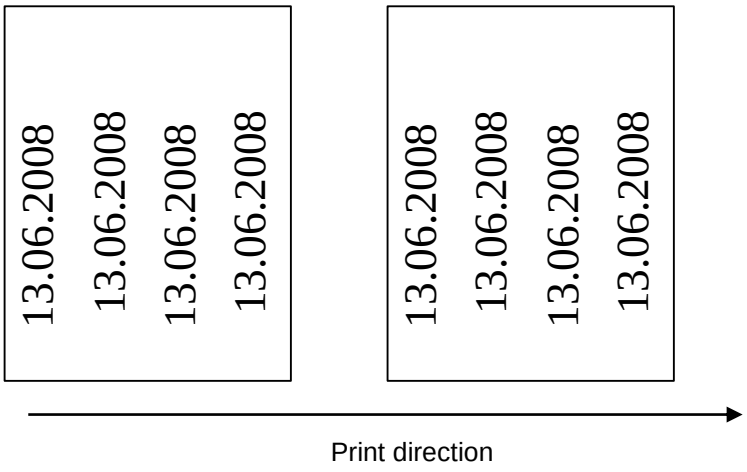
Layout



Transfer ribbon

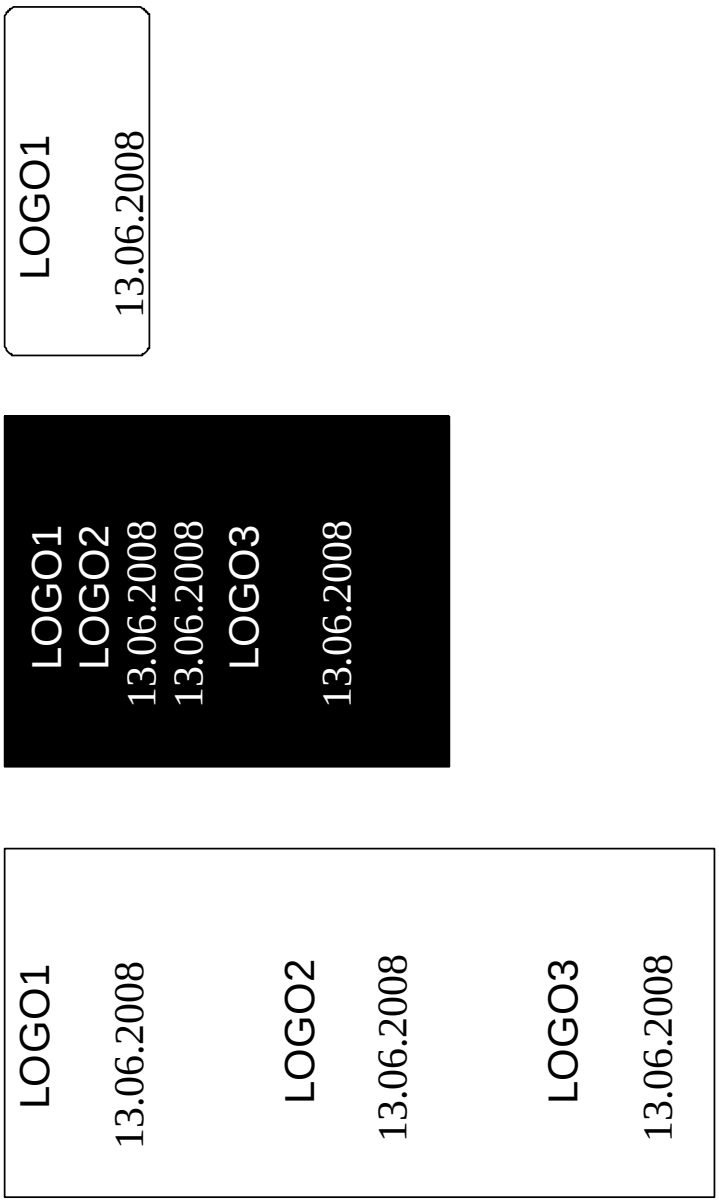


Print result



Example – Lanes printing

X-Shift: 0 mm; Y-Shift: −10 mm; Lanes: 2; R-Shift: 0 mm



Supposed that the print speed is so high that no field ribbon saving is possible, but after a lane enough time is available then by means of the shift ribbon saving the gap of the fields can be filled with suitable layouts

16.3.3 Expert Parameters

Printhead down time

This is used from ribbon saving algorithm for the calculation of start time of printhead downwards movement.

Ribbon motor early start time

This value is added to the acceleration time of transfer ribbon movement. Time indication for the time between 'motor reached material speed' and 'printhead burns'.

If the same value is entered as for PhDownT, the printhead upwards movement is not started before the transfer ribbon motor reached the material speed.

Min. print speed

If the min. print speed is increased, the max. number of cycles is also increased.

Printhead valve react time

It is calculated when the printhead upwards movement is started.

Field ribbon saving mode

Off: Field ribbon saving mode Off.
PHOnly: Only the printhead is moved. The transfer ribbon is not stopped.
Normal: Field ribbon saving is executed only if the transfer ribbon motor is completely stopped.
Strong: Field ribbon saving is executed, even if the transfer ribbon motor is not stopped.

Ribbon saving priority

If the measured speed fluctuation of the material exceeds the processing capability of the printing system, either the optimisation may be reduced, or the print position shifted.

Save start in normal mode

The "SaveStrt" optimisation mode already exists. If a start signal is active during an active print, the transfer ribbon transport is controlled in such a way that the next layout is printed directly after completion of offset travel of the last start signal. To achieve this, however, an optimisation with transfer ribbon retraction is not possible.

To enable a start signal during printing with retraction, this option can be enabled. In this case, however, sufficient print offset for transfer ribbon retraction must be ensured.

Ignore empty lines

In the default operation, the printing system stops for the entire layout length until a new layout can be printed, even if the layout is mainly empty. As some label programs do not provide any layout length, issues may occur in connection with the number of cycles, as the layout length remains constant despite varying lengths of the range to be printed. With this option, all empty lines can be ignored in the beginning, at the end or both.

16.4 Save Start Ribbon Saving (Continuous Mode)

16.4.1 Mode

Ribbon saving mode

Select ribbon saving mode *SaveStrt*.

Max. print speed

Determination of max. print speed.
On the base of this value all necessary calculations e.g. feedback distance and smallest possible print offset are being calculated.

Example

Speed = 400
Mode = Standard

Very good ribbon saving result between 50 mm/s and 400 mm/s.

However, if you print with a speed higher than 400 mm/s, then the ribbon saving result is decreased and/or the ribbon saving can no longer be executed, because the back-feed way was designed to 400 mm/s.

Please consider: if speed is set to 400 and only 300 mm/s are printed, then a smaller number of cycles is reached as if speed is set to 300, however a reserve of 100 mm/s is still available.

Therefore the speed value should be always set to the maximum print speed. If the number of cycles is not sufficient, the rewind correction should be applied.

16.4.2 Expert Parameters

Printhead down time

This is used from ribbon saving algorithm for the calculation of start time of printhead downwards movement.

Ribbon motor early start time

This value is added to the acceleration time of transfer ribbon movement. Time indication for the time between 'motor reached material speed' and 'printhead burns'.

If the same value is entered as for PhDownT, the printhead upwards movement is not started before the transfer ribbon motor reached the material speed.

Min. print speed

If the min. print speed is increased, the max. number of cycles is also increased.

Printhead valve react time	It is calculated when the printhead upwards movement is started.
Field ribbon saving mode	**Off:** Field ribbon saving mode Off. **PHOnly:** Only the printhead is moved. The transfer ribbon is not stopped. **Normal:** Field ribbon saving is executed only if the transfer ribbon motor is completely stopped. **Strong:** Field ribbon saving is executed, even if the transfer ribbon motor is not stopped.
Ribbon saving priority	If the measured speed fluctuation of the material exceeds the processing capability of the printing system, either the optimisation may be reduced, or the print position shifted.
Save start in normal mode	The "SaveStrt" optimisation mode already exists. If a start signal is active during an active print, the transfer ribbon transport is controlled in such a way that the next layout is printed directly after completion of offset travel of the last start signal. To achieve this, however, an optimisation with transfer ribbon retraction is not possible. To enable a start signal during printing with retraction, this option can be enabled. In this case, however, sufficient print offset for transfer ribbon retraction must be ensured.
Ignore empty lines	In the default operation, the printing system stops for the entire layout length until a new layout can be printed, even if the layout is mainly empty. As some label programs do not provide any layout length, issues may occur in connection with the number of cycles, as the layout length remains constant despite varying lengths of the range to be printed. With this option, all empty lines can be ignored in the beginning, at the end or both.

16.5 Standard Ribbon Saving (Intermittent Mode)

16.5.1 Mode

Ribbon saving mode

Select ribbon saving mode *Standard*.

16.5.2 Mode Parameters

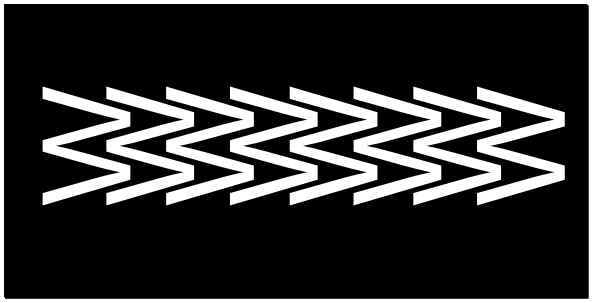
Ribbon correction

0 mm = It is always so far retracted that an optimal ribbon saving is reached (no loss of transfer ribbon). This is rather rarely realised, as the ribbon position can deviate because of inaccuracies at speed measurement (encoder).
Default: -1 mm

−xx mm = The feedback can be made smaller. It causes loss of transfer ribbon but the number of cycles is increased. If the value is increased to the complete backfeed length then the direct print module sets automatically the max. value and no more backfeed is accomplished.

+xx mm = The feedback can be made larger. This causes that it is printed onto the transfer ribbon in the previous printout.

Example



16.5.3 Expert Parameters

Printhead down time

This is used from ribbon saving algorithm for the calculation of start time of printhead downwards movement.

Printhead valve react time

It is calculated when the printhead upwards movement is started.

16.6 Shift Ribbon Saving (Intermittent Mode)

16.6.1 Mode

Ribbon saving mode Select ribbon saving mode *Shift*.

16.6.2 Shift Ribbon Saving Parameters

X-Shift Indication of displacement of the printout in X direction. The printout can be displaced by the entry of a positive or negative value in both directions.

Y-Shift Indication of displacement of the printout in printing direction. Enter value 0 in order to achieve a print result in which the columns are arranged side by side on the transfer ribbon.

Lane repeats Indication of number of lanes printed side by side.

Lane repeat shift Indication of distance when changing to a new lane.

16.6.3 Expert Parameters

Printhead down time Is used from the ribbon saving algorithm to calculate the start of the printhead downwards movement.

Printhead valve react time The time is calculated when the printhead upwards movement is started.

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