

SPECTRA II

Operating Manual



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Carl Valentin label printers comply with the following safety guidelines:

CE EG Low-Voltage Directive (2006/95/EG)
EG Electromagnetic Compatibility Directive (2004/108/EG)



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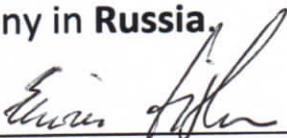


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1 Introduction

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.



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

Datum

Information in the display

1.2 Intended Use

The label printer 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 label printer or other property could be damaged while operating the device.

The label printer 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 label printer 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.

**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 Important Notes

The label printer can be used in thermal as well as in thermal transfer applications.

The label printer is equipped with 8 vector, 6 bitmap and 6 proportional fonts. It can be printed inverse, in italic format or 90 degrees turned fonts.

The handling of our durable label printers is easy and comfortable. The parameter settings are made at the touchscreen.

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

The label printer is delivered with a printer driver and the free label software Labelstar Office LITE. Existing labels can be saved to a CF card or an USB stick, opened and/or modified with a PC keyboard and finally stand-alone printed.

1.4 Connector Pin Assignment (Printer Rear)

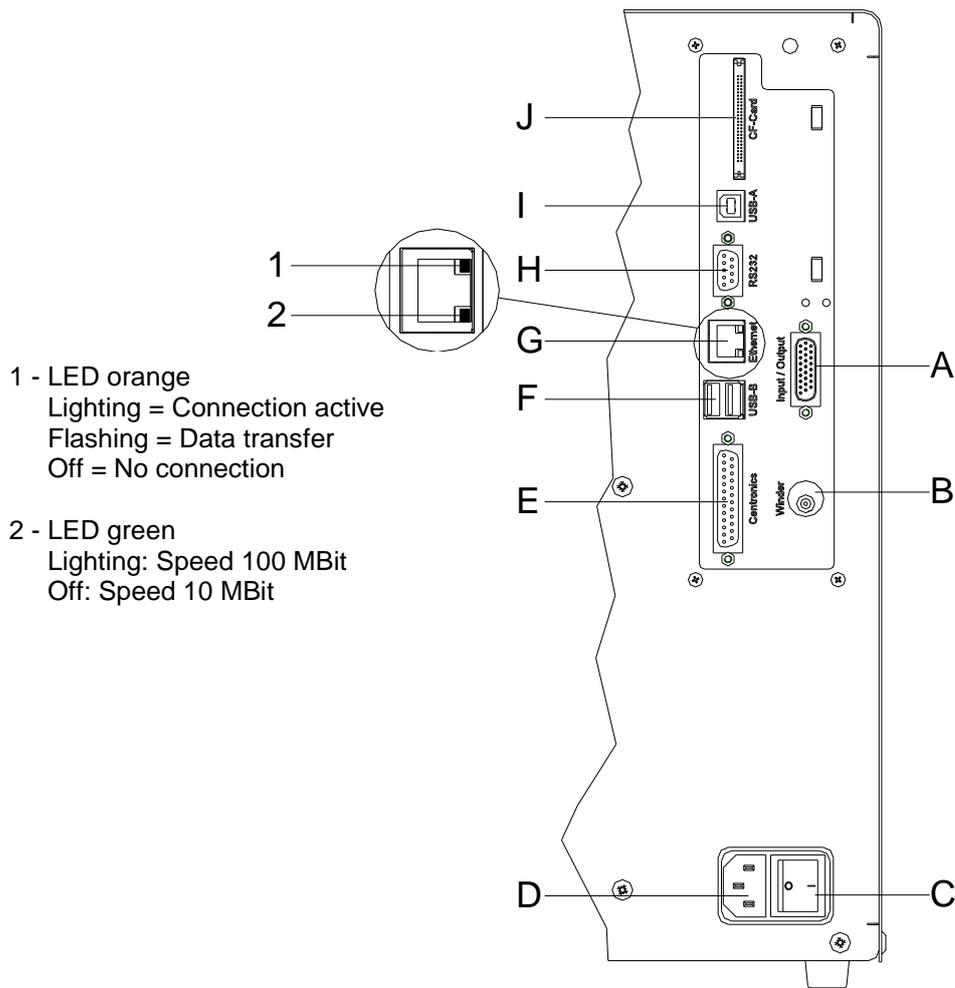


Figure 1

- A External output/input (option)
- B Winder connection
- C Switch On/Off
- D Power supply
- E Parallel interface
- F USB host for USB keyboard and USB memory stick
- G Ethernet 10/100 interface
- H Serial interface RS-232
- I USB interface
- J Plug-in for CF card

2 Safety Instructions

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

Couple the label printer to devices using extra low voltage only.

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

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

Do not operate the label printer in explosive atmosphere and not in proximity of high voltage power lines.

Operate the label printer only in an environment protected against abrasive dust, swarf and other similar impurity.

If the label printer is operated with the cover open, ensure that clothing, hair, jewellery and similar personal items do not contact the exposed rotating parts.

The print unit can get hot during printing. Do not touch the printhead during operation. Cool down the print unit before changing material, removal or adjustment.

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 print module can endanger operational safety.

Always have service work done in a qualified workshop, where the personnel have the technical knowledge and tools required to do the necessary work.

There are warning stickers on the label printer 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.



DANGER!

Danger to life and limb from power supply!

⇒ Do not open the casing.

2.1 Operating Conditions

Before initial operation and during operation these operating conditions have to be observed to guarantee safe and interference-free service of our printers.

Therefore please carefully read these operating conditions.

Shipment and storage of our printers are **only** allowed in original packing.

Installation and initial operation of printer is only allowed if operating conditions were **fulfilled**.

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

Operation of printer is only allowed by especially trained persons.



NOTICE!

Perform trainings regularly.

Content of the training are chapter 2.1 (Operating Conditions), chapter 5 (Loading Media) and chapter 7 (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 printer should be even, free of vibration and currents of air are to be avoided.

The printers have to be installed to ensure optimal operation and servicing.

Installation of power supply

The installation of the power supply to connect our printers 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 printers 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: $\leq 5\%$

Anti-Interference measures:

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

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

Stray radiation and immunity from disturbance

Emitted interference according to EN 61000-6-3: 2007 industrial sector

- Interference voltage to wires according to EN 55022/AC: 2011-10
- Interference field power according to EN 55022/AC: 2011-10
- System perturbation according to EN 61000-3-2: 2014-08
- Flicker according to EN 61000-3-3: 2013-08

Immunity to interference according to EN 61000-6-2: 2008 industrial sector

- Stray radiation against discharge of static electricity according to EN 61000-4-2: 1995
- Electromagnetic fields according to EN 61000-4-3: 2002
- Fast transient burst according to EN 61000-4-4: 2004
- Surge according to EN 61000-4-5: 1995
- High-frequency tension according to EN 61000-4-6: 2014-02
- Magnetic field with energy frequency according to EN 61000-4-8: 1993
- Voltage interruption and voltage drop according to EN 61000-4-11: 2004

**NOTICE!**

This is a machine of type A. This machine can cause interferences in residential areas; in this case it can be required from operator to accomplish appropriate measures and be responsible for it.

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: $-15 \dots +80 \text{ }^{\circ}\text{C}$.

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 60950.

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 line length:

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

with parallel interface - 3 m (with shielding)

with USB - 3 m

with Ethernet - 100 m

Air convection

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

Limit values

Protection according IP: 20

Ambient temperature $^{\circ}\text{C}$ (operation): Min. +5 Max. +35

Ambient temperature $^{\circ}\text{C}$ (storage): Min. -20 Max. +60

Relative air humidity % (operation): Max. 80

Relative air humidity % (storage): Max. 80

(bedewing of printers 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 printers.
- 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 printers 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 printers.

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 printer 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.

3 Technical Data

3.1 Spectra II (103, 104, 106, 107)

	Spectra II 103/8	Spectra II 104/8	Spectra II 106/12	Spectra II 106/24	Spectra II 107/12
Print resolution	200 dpi	200 dpi	300 dpi	600 dpi	300 dpi
Max. print speed	350 mm/s	350 mm/s	350 mm/s	100 mm/s	350 mm/s
Print width	104 mm	104 mm	105.7 mm	105.6 mm	106.6 mm
Passage width	116 mm	116 mm	116 mm	116 mm	116 mm
Printhead	Flat Type*	Flat Type**	Flat Type**	Flat Type**	Corner Type**
Labels					
Labels, continuous rolls or fan-fold	paper, cardboard, textile, synthetics				
Material weight	max 220 g/m ² (larger on demand)				
Label width	min 15 mm	min 15 mm	min 15 mm	min 15 mm	min 15 mm
Label height					
Standard	min 6 mm	min 6 mm	min 6 mm	min 6 mm	min 6 mm
Cutter/dispenser mode	min 25 mm	min 25 mm	min 25 mm	min 25 mm	min 25 mm
Max label height	6000 mm	6000 mm	3000 mm	750 mm	3000 mm
Roll diameter					
Internal unwinder	max. 200 mm				
Internal rewinder	max. 200 mm (option)				
Core diameter	40 mm / 75 mm (option)				
Winding	outside or inside				
Label sensor					
Standard	transmission and reflexion from bottom				
Option	transmission and reflexion from top, ultrasonic photocell				
Transfer ribbon					
Ink	outside or inside				
Roll diameter	max. Ø 90 mm				
Core diameter	25.4 mm / 1"				
Ribbon length	max 450 m				
Ribbon width	max 110 mm	max 110 mm	max 110 mm	max 110 mm	max 110 mm
Dimensions (mm)					
Width x height x depth	287x380x 503	287x380x 503	287x380x 503	287x380x 503	287 x 380 x 503
Weight	19 kg	19 kg	19 kg	19 kg	19 kg
Electronics					
Processor	High Speed 32 Bit				
RAM	16 MB				
Slot	for Compact Flash card Type I				
Battery cache	for Real-Time clock (storage of data with shut-down)				
Warning signal	acoustic signal when error				
Interfaces					
Serial	RS-232C (up to 115200 Baud)				
Parallel	SPP				
USB	2.0 High Speed Slave				
Ethernet	10/100 Base T, LPD, RawIP-Printing, DHCP, HTTP, FTP				
3 x USB Host	connection for external USB keyboard and memory stick				
WLAN (option)	module 802.11 b/g/n WEP, WPA, WPA-PSK, WPA2, WPA2-PSK, EAP				

* for thermal direct

** for thermal transfer

Operation data	Spectra II 103/8	Spectra II 104/8	Spectra II 106/12	Spectra II 106/24	Spectra II 107/12
Power supply	110 ... 230 V				
Power consumption	300 VA				
Nominal current	2,7 A				
Operating temperature	5 ... 35 °C				
Humidity	max 80% (non condensing)				
Operation panel					
Keys	home, function menu, memory menu, print start, test print, label feed				
Touch-screen display	800 x 480 pixels with backlight screen size 6,5"				
Settings					
	date, time, shift times 11 language settings (others on demand) label and device parameters, interfaces, password protection, variables				
Monitoring					
Stop printing if	end of ribbon / end of labels				
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 to 1257, DOS 437, 850, 852, 857, UTF-8 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°				
Vector 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				
Label software	Labelstar Office Lite; Labelstar Office				
Windows 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				

3.2 Spectra II (108, 160, 162, 216)

	Spectra II 108/12	Spectra II 160/12	Spectra II 162/12	Spectra II 216/12
Print resolution	300 dpi	300 dpi	300 dpi	300 dpi
Max. print speed	350 mm/s	300 mm/s	300 mm/s	200 mm/s
Print width	108.4 mm	160 mm	162.6 mm	216.8 mm
Passage width	116 mm	176 mm	176 mm	226 mm
Printhead	Flat Type*	Corner Type**	Flat Type*/**	Flat Type*/**
Labels				
Labels, continuous rolls or fan-fold	paper, cardboard, textile, synthetics			
Material weight	max 220 g/m ² (larger on demand)			
Label width	min 15 mm	min 50 mm	min 50 mm	min 100 mm
Label height				
Standard	min 6 mm	min 15 mm	min 15 mm	min 15 mm
Cutter/dispenser mode	min 25 mm	min 25 mm	min 25 mm	min 25 mm
Label height	max 3000 mm	max 2000 mm	max 2000 mm	max 1000 mm
Roll diameter				
Internal unwinder	max 200 mm			
Internal rewinder	max 200 mm (option)			
Core diameter	40 mm / 75 mm (option)			
Winding	outside or inside			
Label sensor				
Standard	transmission and reflexion from bottom			
Option	transmission and reflexion from top, ultrasonic photocell			
Transfer ribbon				
Ink	outside or inside			
Roll diameter	Ø 90 mm			
Core diameter	25.4 mm / 1"			
Ribbon length	450 m			
Ribbon width	110 mm	163 mm	170 mm	220 mm
Dimensions (mm)				
Width x height x depth	287 x 380 x 503	337 x 380 x 503	337 x 380 x 503	387 x 380 x 503
Weight	19 kg	21 kg	21 kg	28 kg
Electronics				
Processor	High Speed 32 Bit			
RAM	16 MB			
Slot	for Compact Flash card Type I			
Battery cache	for Real-Time clock (storage of data with shut-down)			
Warning signal	acoustic signal when error			
Interfaces				
Serial	RS-232C (up to 115200 Baud)			
Parallel	SPP			
USB	2.0 High Speed Slave			
Ethernet	10/100 Base T, LPD, RawIP-Printing, DHCP, HTTP, FTP			
3 x USB Host	connection for external USB keyboard and memory stick			
WLAN (option)	module 802.11 b/g/n WEP, WPA, WPA-PSK, WPA2, WPA2-PSK, EAP			

* for thermal direct

** for thermal transfer

Operation data	Spectra II 108/12	Spectra II 160/12	Spectra II 162/12	Spectra II 216/12
Power supply	110 ... 230 V			
Power consumption	300 VA			
Nominal current	2,7 A			
Operating temperature	5 ... 35 °C			
Humidity	max 80% (non condensing)			
Operation panel				
Keys	home, function menu, memory menu, print start, test print, label feed			
Touch-screen display	800 x 480 pixels with backlight screen size 6,5"			
Settings				
	date, time, shift times 11 language settings (others on demand) label and device parameters, interfaces, password protection, variables			
Monitoring				
Stop printing if	end of ribbon / end of labels			
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 to 1257, DOS 437, 850, 852, 857, UTF-8 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°			
Vector 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			
Label software	Labelstar Office Lite; Labelstar Office			
Windows 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			

Standard equipment

- 6,5" touch display
- Tear-off edge
- Real time clock with printout date and time
Automatic daylight saving time
Storage of data with shut-down
- Variables: link field, counter, date/time, currency and shift variable, CF data
- Integrated unwinder
(max outer diameter 200 mm / 8")
- Thermal or thermal transfer version
- USB host for connection of an external USB keyboard and an USB memory stick
- Ethernet interface
- CVPL protocol and ZPL II[®] protocol
- Label photocell
(transmission and reflexion from below)
- Slot for CF card
- Windows printer driver on CD ROM
- Labelstar Office Lite on CD ROM

Optional equipment

- Transfer ribbon saving (not 216/12)
- Integrated rewinder
(max outer diameter 200 mm)
- Cutting unit 'Rotation'
- Cutting unit 'Guillotine' (Spectra II 216)
- Dispensing unit with photocell
- Dispensing unit without photocell
- Ultrasonic photocell (not 107/12, 160/12, 216/12)
- External unwinder
- WLAN interface
- Applicator prearrangement for APX 7000
- Bar code scanner
- Dispenser I/O
- Labelstar Office

3.3 Control Inputs and 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 circuitry

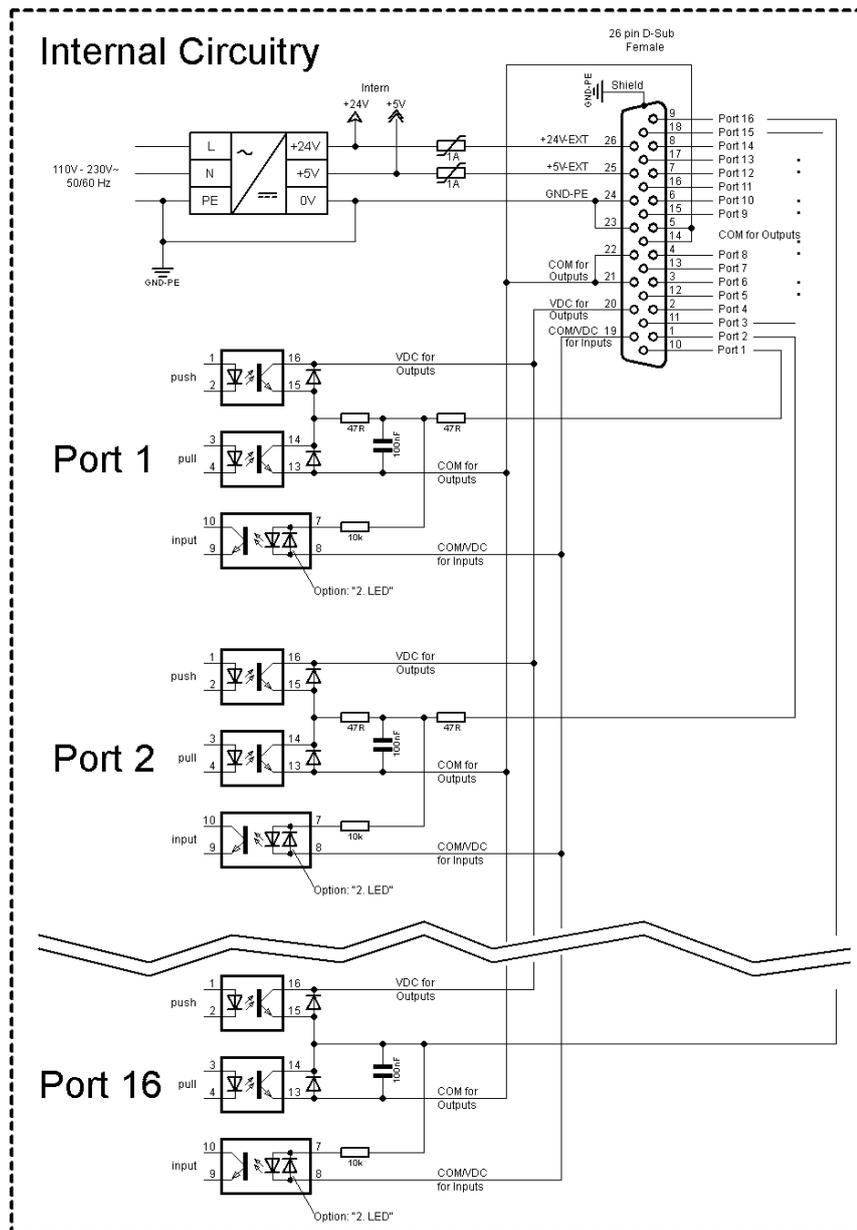


Figure 2

Configuration of D-Sub socket

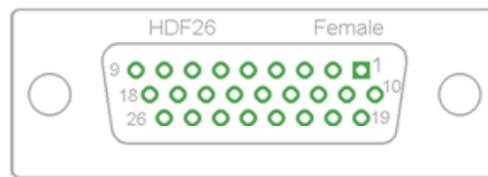


Figure 3

Port 1 to Port 16 = Assignment for I/O Profile 'Std_Label'

Identification	Pin	Description / Function
Port 1	10	Print start and cut (Input)
Port 2	1	Reprint last printed label (Input)
Port 3	11	Counter Reset (Input)
Port 4	2	No function
Port 5	12	Error reset (Input)
Port 6	3	No function
Port 7	13	No function
Port 8	4	No function
Port 9	15	Error (Output)
Port 10	6	Print order activ (Output)
Port 11	16	Dispenser photocell: Label exists at dispenser photocell (Output)
Port 12	7	Single print (Output)
Port 13	17	Ready (Output)
Port 14	8	No function
Port 15	18	Option scanner only Bar code not readable (Output)
Port 16	9	Prior warning for transfer ribbon end (Output)
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).

Identification	Pin	Description / Function
+ 5 VDC EXT	25	5 Volt DC output for external use. Max. 1 A. This voltage is provided from the printing system 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 the printing system and can be used e.g. as control voltage. Never apply any external voltage to this output.

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.

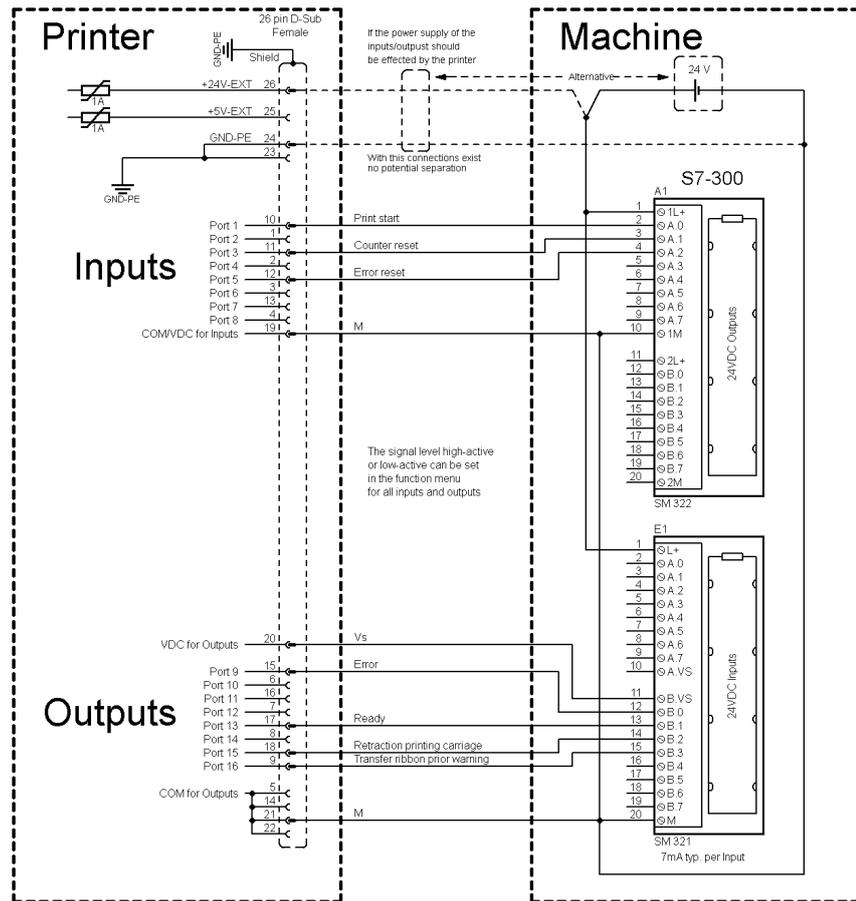


Figure 4

Example 2

Device connection to an operating panel.

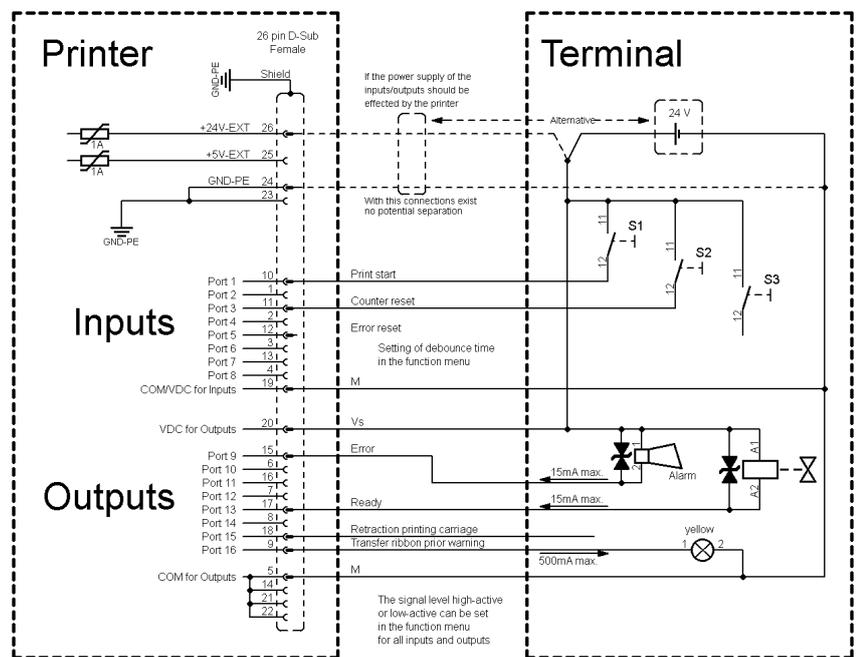


Figure 5

Example 3

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

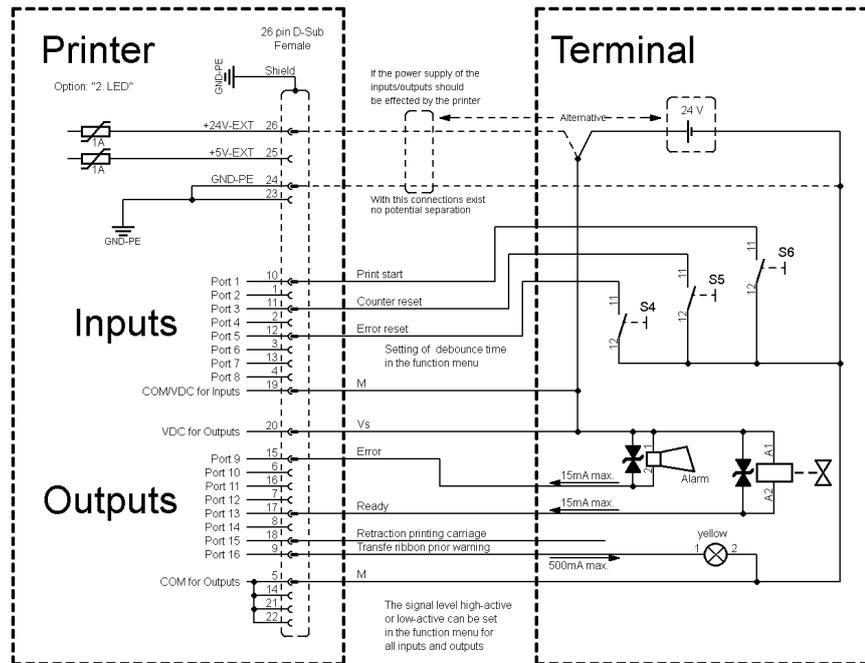


Figure 6

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 minimise 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.

4 Installation

Unpack the label printer

- ⇒ Lift the label printer out of the box.
- ⇒ Check the label printer for transport damages.
- ⇒ Check delivery for completeness.

Scope of delivery

- Label printer.
- Power cable.
- Empty core, mounted on transfer ribbon rewinder.
- Tear-off edge (printers with option tear-off edge only).
- Dispenser edge (printers with option dispenser only).
- Cutter unit (printers with option cutter only).
- Documentation.
- Printer driver on CD ROM.
- Labelstar Office LITE on CD ROM



NOTICE!

Retain original packaging for subsequent transport.

4.1 Setting up the Label Printer



CAUTION!

The label printer and the print media can be damaged by moisture and water.

- ⇒ Set up the label printer only in a dry place protected from sprayed water.

- ⇒ Set up label printer on a level, vibration-free and air draught-free surface.
- ⇒ Open cover of label printer.
- ⇒ Remove foam transportation safeguards near the printhead.

4.2 Connecting the Label Printer

Connecting to the power supply

The label printer is equipped with a versatile power supply unit. The device may be operated with a mains voltage of 110-230 V / 50-60 Hz without any adjustments or modifications.



CAUTION!

The label printer can be damaged by undefined switch-on currents.

⇒ Set the power switch to '0' before plugging in the label printer.

⇒ Insert power cable into power connection socket.

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

Connecting 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 label printer are grounded.

⇒ Connect label printer to computer or network with a suitable cable.

4.3 Initiation of the Label Printer

⇒ Switch on the label printer with the power switch.

⇒ Insert label material and transfer ribbon (see chapter 5. Loading Media, page 27).

⇒ Go to menu *Label layout*, select menu item *Measure label* and start measuring.



NOTICE!

To enable correct measuring, at least two completed labels have to be passed through (not for continuous labels).

During measuring the label and gap length small differences can occur. Therefore the values can be set manually in menu *Label layout/Label and Gap*.

5 Loading Media

5.1 Loading Label Roll

Loading label roll in rewind mode

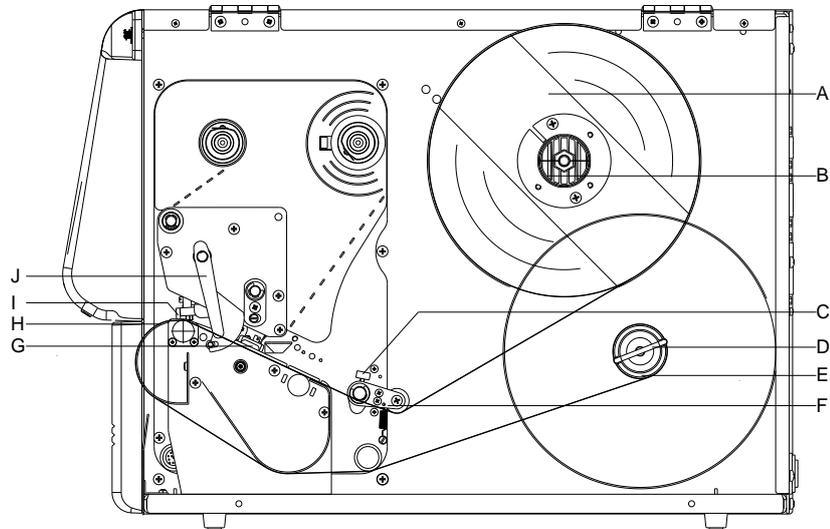


Figure 7



NOTICE!

In rewind mode the labels are wound up internally after printing for later use.

1. Open the printer cover.
2. Open printhead (I) by turning the pressure lever (J) anticlockwise.
3. Remove the outside label mounting plate (A).
4. Load the label roll with inner winding onto the unwinding roll (B).
5. Attach again the label mounting plate (A).
6. Lead the label material below the label guiding (F). Pay attention that the label runs through the photocell (G).
7. Place the labels around the front sheet (H) and lead them below the mechanics to the rear.
8. Clamp the label material, with the handle (D) designated for it, at the rewinding roll (F).
9. To move the printhead (I) down, turn the pressure lever (J) in clockwise direction until it locks.
10. Adjust the limit stops (C) of the label guiding roll to the width of material.
11. Close the printer cover.

Loading label roll in tear-off mode

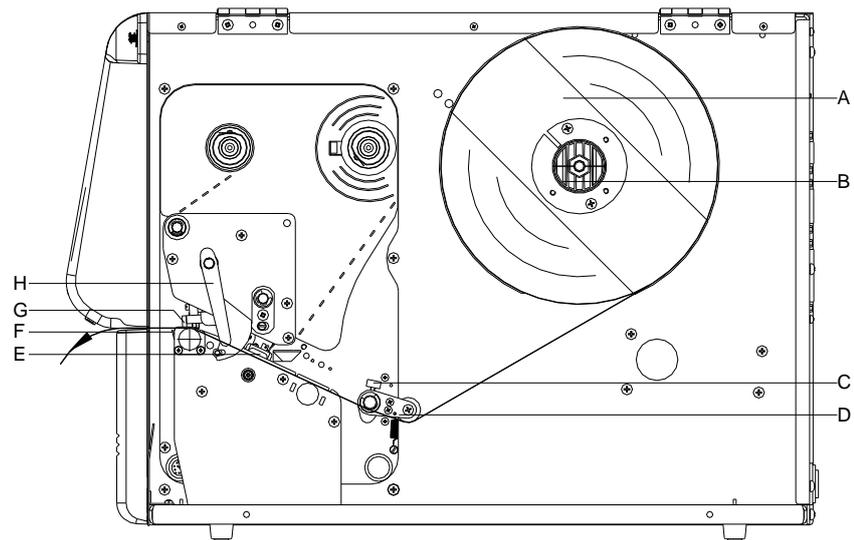


Figure 8

- 1.
2. Open the printhead (G) by turning the pressure lever (H) anticlockwise.
3. Remove the outside label mounting plate (A).
4. Load the label roll with inner winding onto the unwinding roll (B).
5. Attach again the label mounting plate (A).
6. Lead the label material below the label guiding (D). Take care that the label runs through the photocell (E).
7. To move the printhead (G) down, turn the pressure lever (H) in clockwise direction until it locks.
8. In front of the printhead the tear off edge (F) is visible.
9. Enter the offset value in menu *Printer Initialisation/Tear off*.
10. Adjust the limit stops (C) of the label guiding to the width of material.
11. Close the printer cover.

Loading label roll in cutter mode

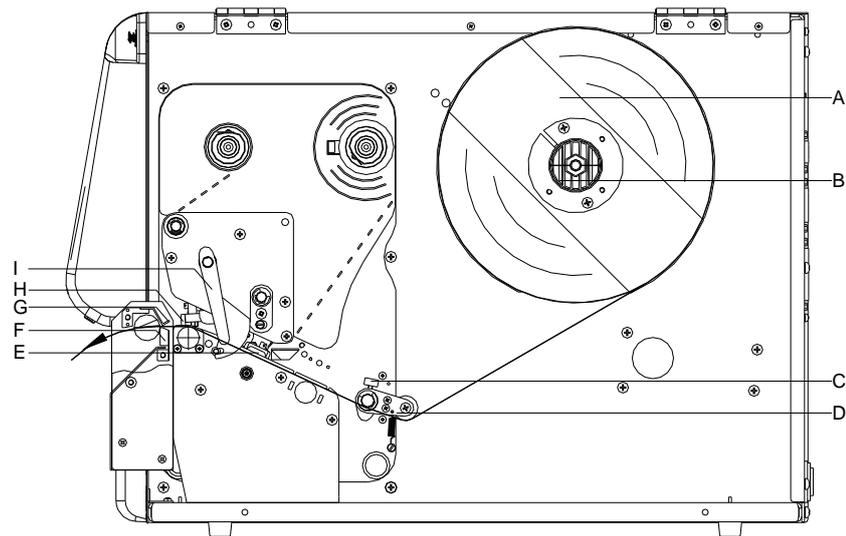


Figure 9

1. Open the printer cover.
2. Open the printhead (H) by turning the pressure lever (I) anticlockwise.
3. Remove the outside label mounting plate (A).
4. Load the label roll with inner winding onto the unwinding roll (B).
5. Attach again the label mounting plate (A).
6. Lead the label material below the label guiding (D) and the printhead (H).
Take care that the label runs through the photocell (E).
7. Lead the label material between the inserting angle (G) and the cutter ledge (F).
8. To move the printhead (H) down, turn the pressure lever (I) in clockwise direction until it locks.
9. Adjust the limit stops (C) of the label guiding to the width of material.
10. Close the printer cover.

Loading label roll in dispenser mode

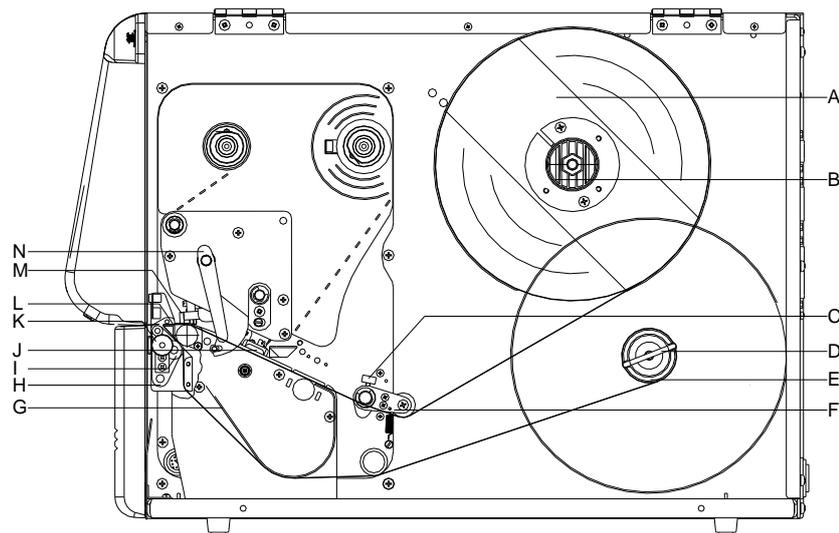


Figure 10

1. Open the printer cover.
2. Open the printhead (M) by turning the pressure lever (N) anticlockwise.
3. Remove the outside label mounting plate (A).
4. Load the label roll with inner winding onto the unwinding roll (B).
5. Attach again the label mounting plate (A).
6. Lead the label material below the label guiding (F) and printhead (M). Take care that the labels run through the photocell (J).
7. Lift the dispensing whip (H) by pulling the knurled knob (K) outwards to front/to the bottom.
8. To move the printhead (M) down, turn the pressure lever (N) in clockwise direction until it locks.
9. Adjust the limit stops (C) of the label guiding to the width of material.
10. Strip some labels from the backing paper and lead the paper over the dispenser ledge (L) and behind the plastic roll (I).
11. Press again the dispensing whip (H) to the top and lock it.
12. Place the backing paper around the shaft (G) and fix it with the clamp (E) at the rewinding unit (D).
13. Enter the offset value in menu *Dispenser I/O/Offset*.
14. Close the printer cover.

5.2 Loading transfer ribbon



NOTICE!

For the thermal transfer printing method it is necessary to load a ribbon, otherwise when using the printer in direct thermal print it is not necessary to load a ribbon. The ribbons used in the printer have to be at least the same width as the print media. In case the ribbon is narrower than the print media, the printhead is partly unprotected and this could lead to early wear and tear.

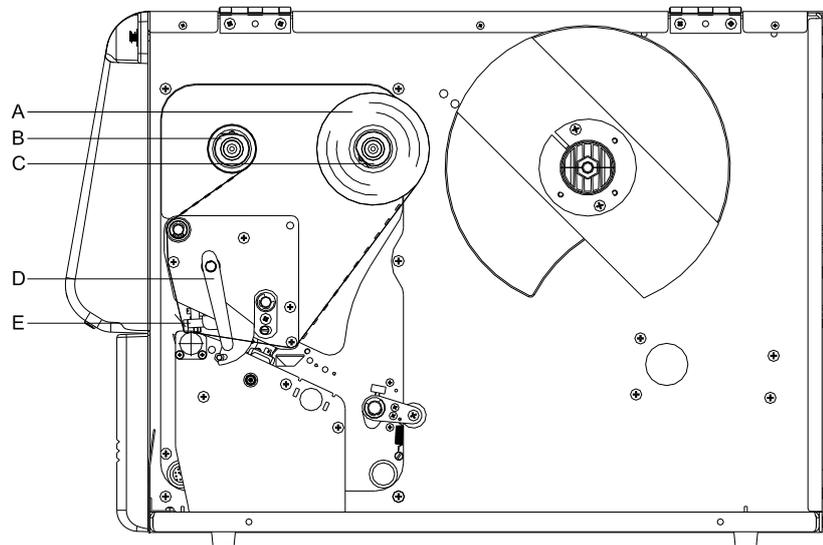


Figure 11



NOTICE!

Before a new transfer ribbon roll is loaded, the printhead must be cleaned using printhead and roller cleaner (97.20.002). For detailed information, please see page 50.

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.

1. Open the printer cover.
2. Open the printhead (E) by turning the pressure lever (D) anticlockwise.
3. Load the transfer ribbon roll (A) with outer winding onto the unwinding roll (C).
4. Place an empty ribbon roll on the rewinding roll (B).
5. Lead the transfer ribbon below the printhead (E).

6. Fix the ribbon with an adhesive tape in rotating direction at the empty roll of the rewinding roll (B).
Pay attention to the rotation direction of transfer ribbon rewinder.
7. In order to move the printhead (E) down, turn the pressure lever (D) in clockwise direction until it locks.
8. Close the printer cover.

**NOTICE!**

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 printer malfunctions and the guarantee can expire.

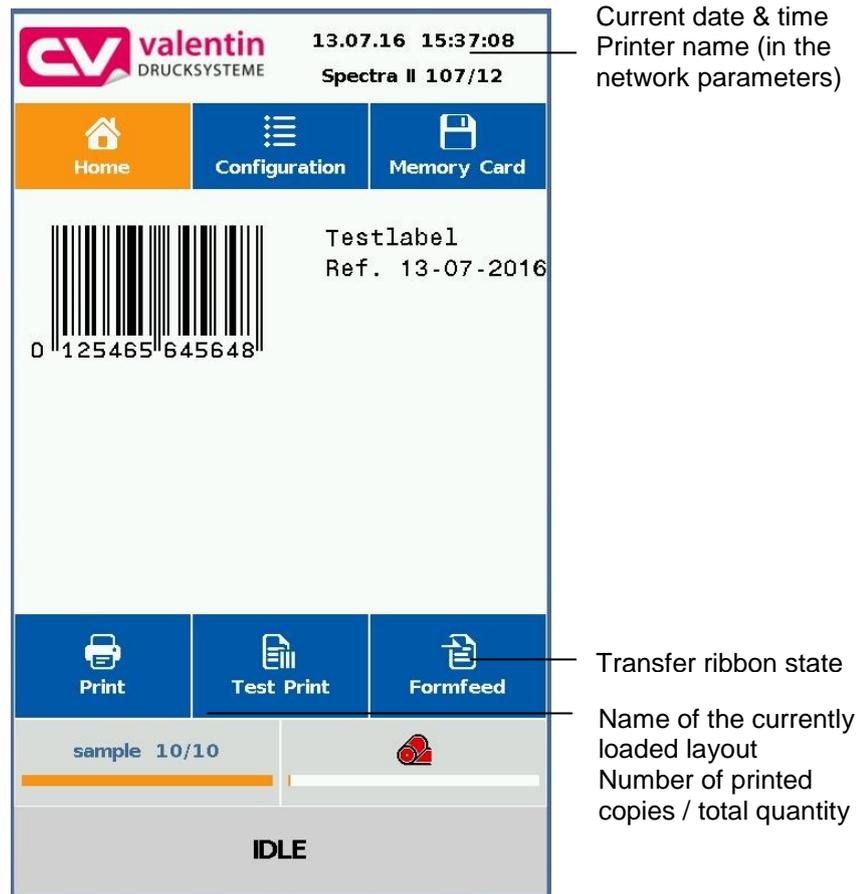
6 Touch-Screen Display

6.1 Touch-screen 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.

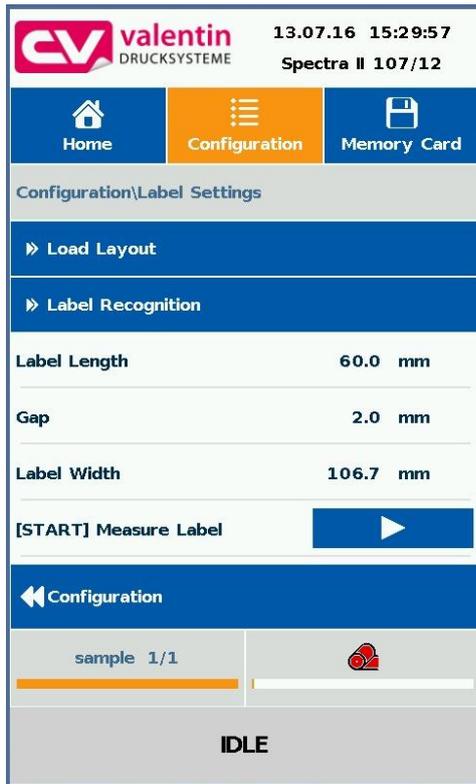
The desired settings are made by selecting the buttons on the touch-screen display.



Home	Home screen
Configuration	Select parameter settings
Memory Card	Access to memory card menu
Print	Start print job
Test print	Start test print
Formfeed	Start layout feed

6.2 Indication of Menus

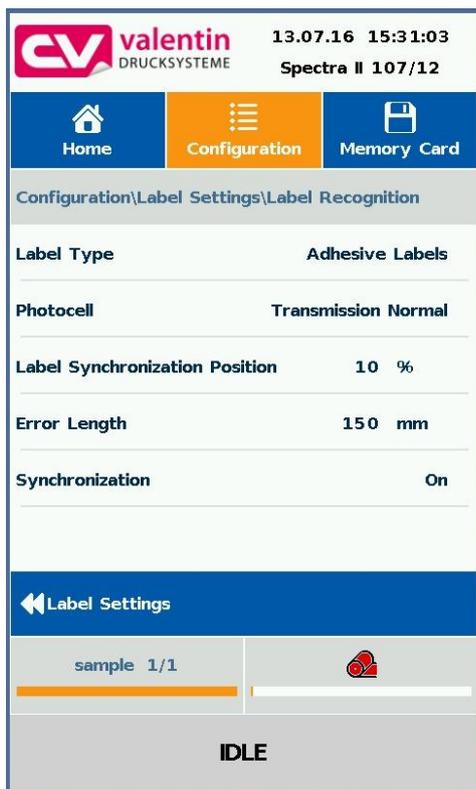
Indication of main menus



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.

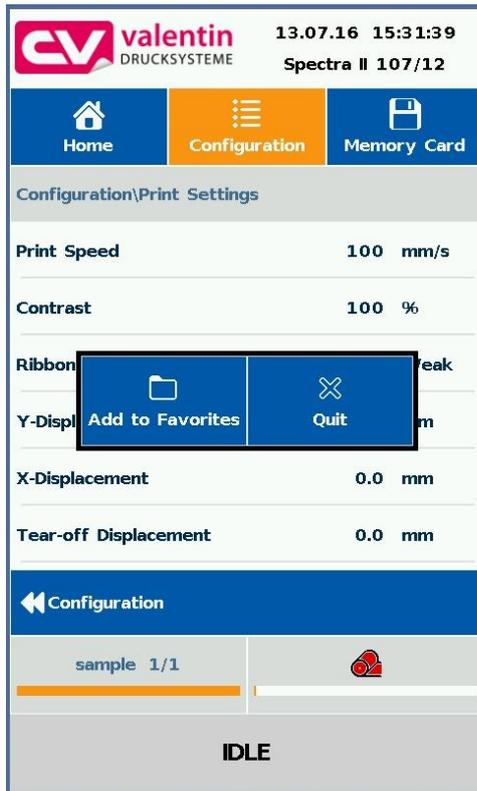
The selected submenu is displayed in the address line (example: label recognition).

Press  to return one level.

Press *Home* to change to the start screen at any time.

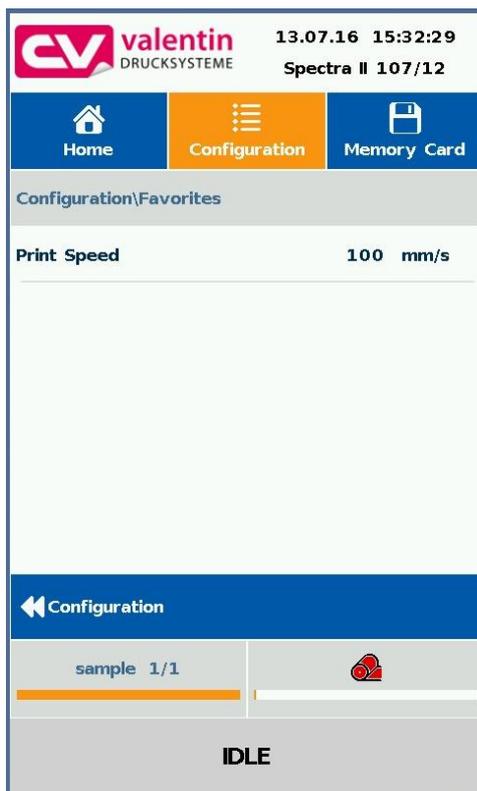
6.3 Favorites List

Add parameters to favorites

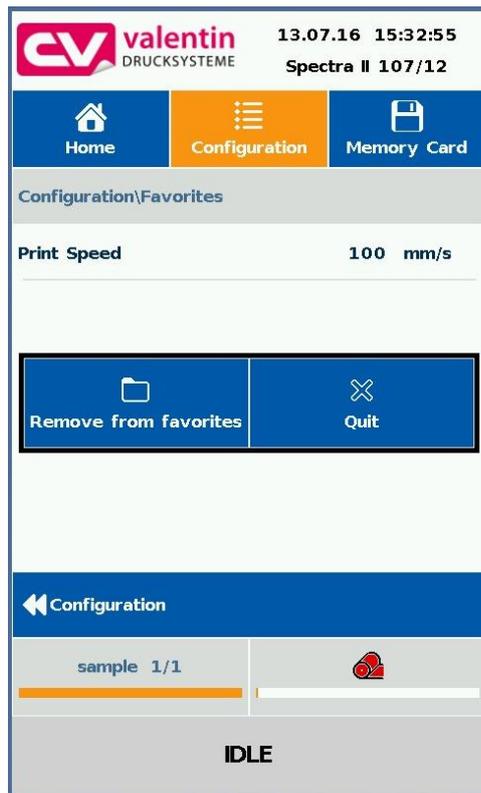


The user can store the most important parameters for his application into a favorites list to have a fast as possible access.

Press long (2 s) on a parameter (e.g. print speed) to display the *Add to favorites* button.



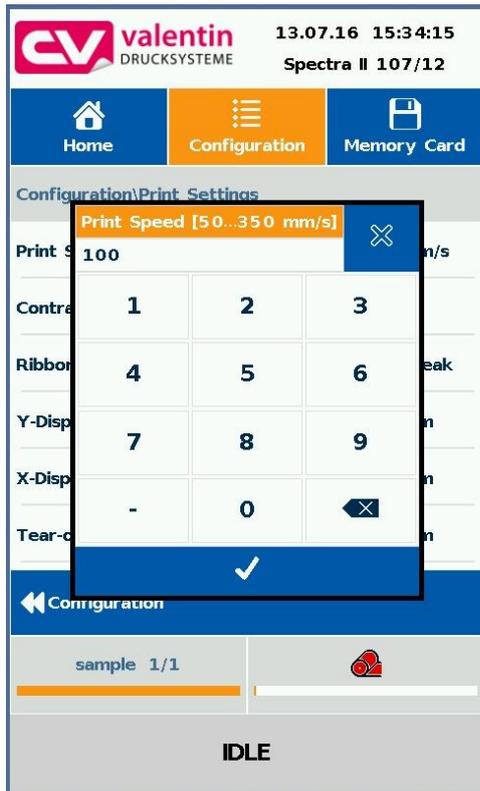
Press *Add to favorites* to add the selected parameter to the favorites list.

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.

6.4 Parameter Input

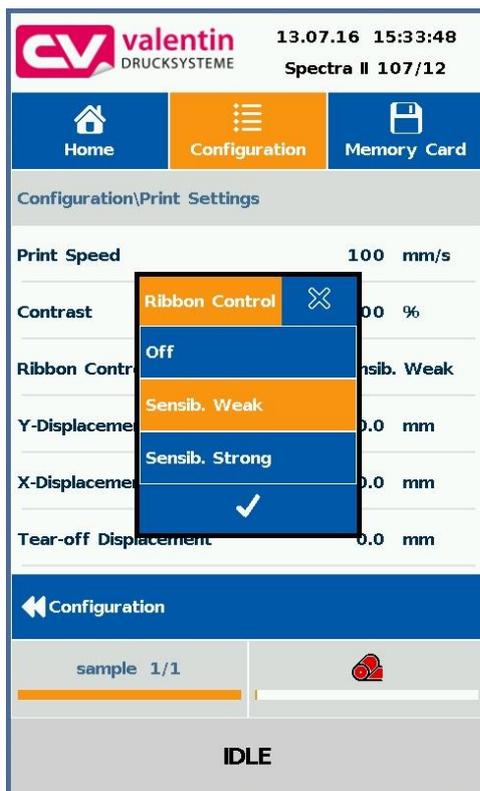
Numeric input



Select the parameter for which the value is to be modified.

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 / Special characters input

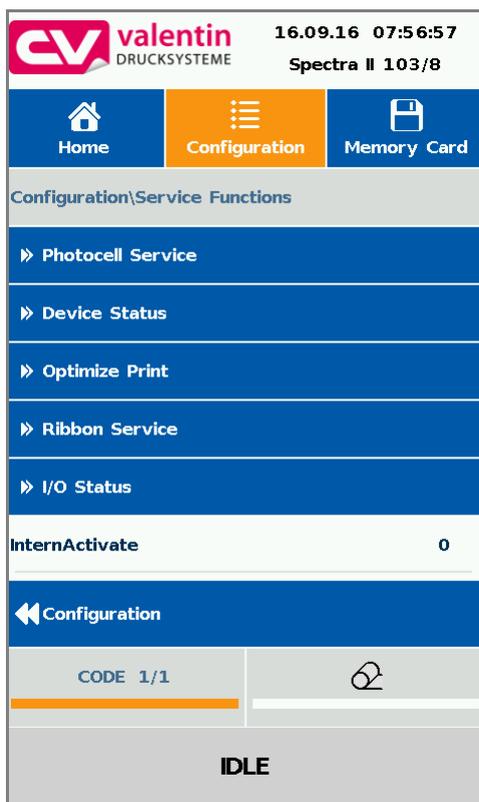


Select the parameter for which you want to change the selection.

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

Press  to confirm the selection.

6.5 Navigation Zones



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



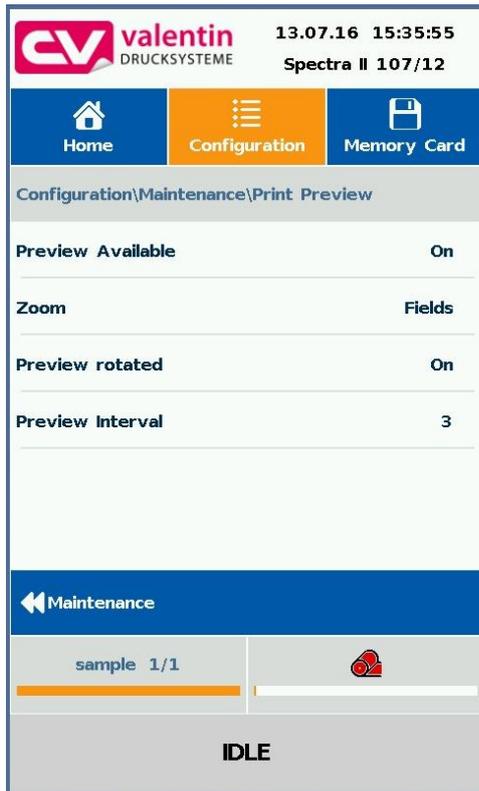
NOTICE!

With the used resistive touch screen variant a certain pressure on the display is needed. It is not possible to navigate on the display with the swipe movement to the left and right with a finger (well-known from smartphones).

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.

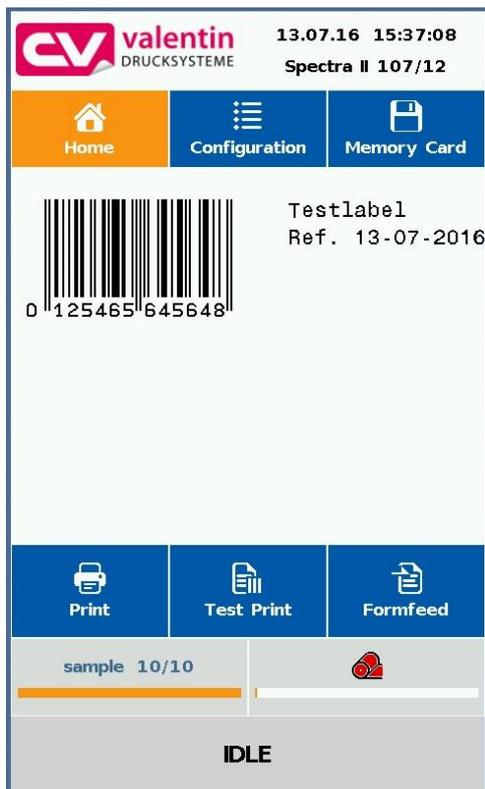
6.6 Maintenance Zone

Maintenance - Print preview



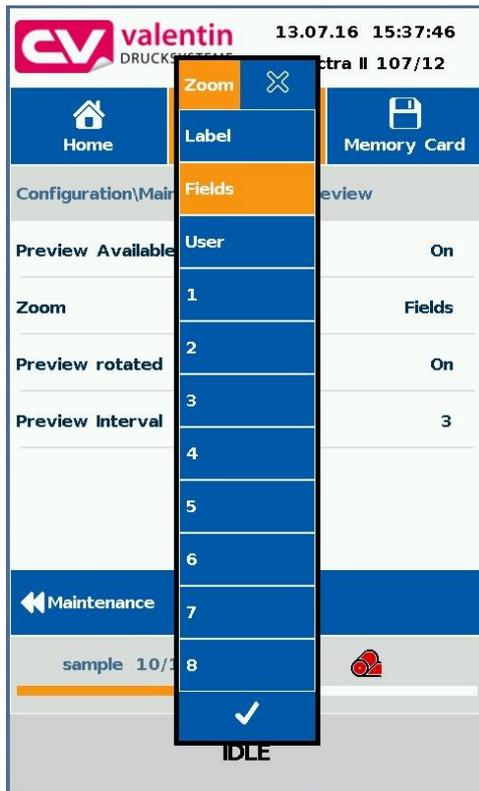
Different settings for the display indication can be done.

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.

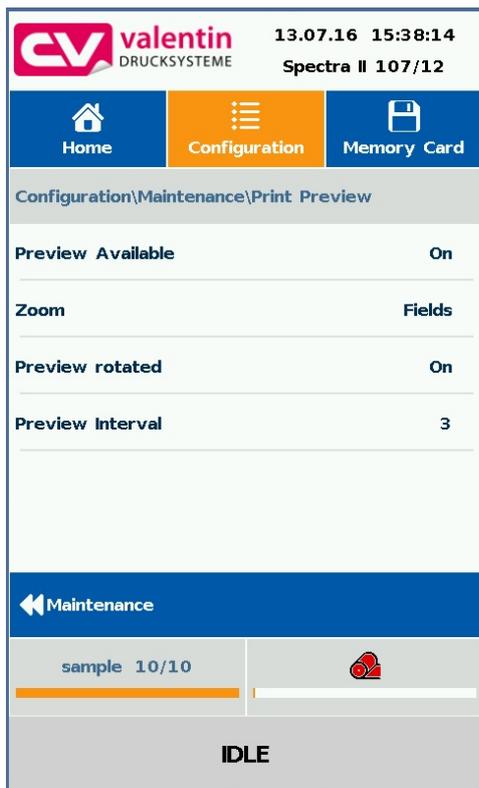
Label: The complete layout is fit to the indication zone.

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

User: A freely defined zone is fit to the indication zone (see Labelstar Office).

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.

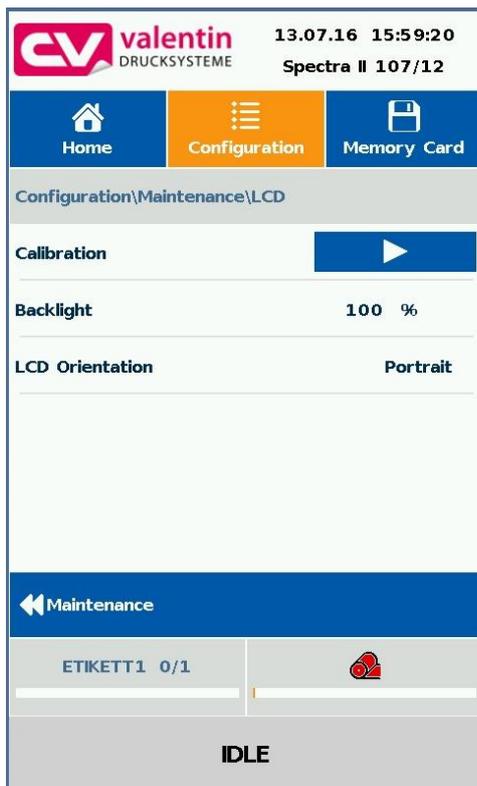
Print preview – Print preview interval



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

Value range: 2 .. 10 secondes

Maintenance - LCD



In the LCD maintenance sector, different parameters on the touch-screen display can be set.

LCD - Calibration

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

**Touch the Display to Start Calibration.
To calibrate the Display, touch the red dots with a pda pen**

For the start of calibration the display must be touched at any position. Afterwards three red points are shown successively and you have to touch them as exact as possible. The calibration is finished with it.



CAUTION!

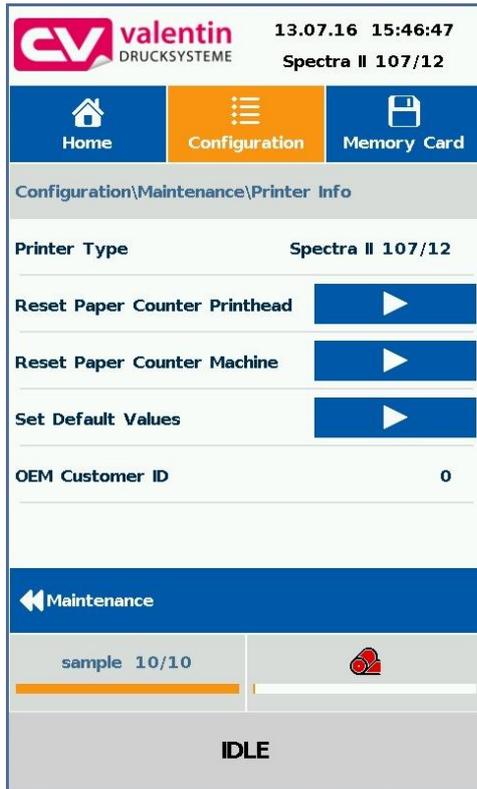
If the calibration was performed incorrectly, the printing system cannot be controlled anymore.

⇒ Run firmware update. If necessary, the already installed version.

LCD - Background light



Setting of contrast of background lighting.
Value range: 0 .. 100%.

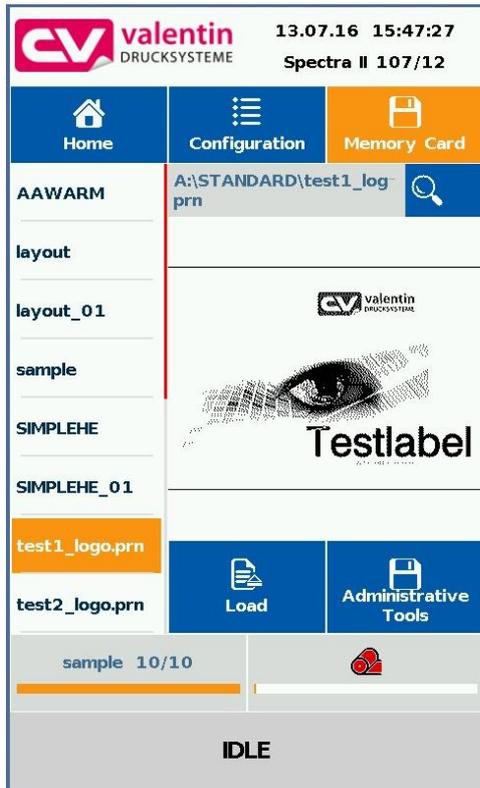
Maintenance – System settings

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

However, for the settings the corresponding password is necessary.

6.7 Memory Menu

Compact Flash Card / USB Stick



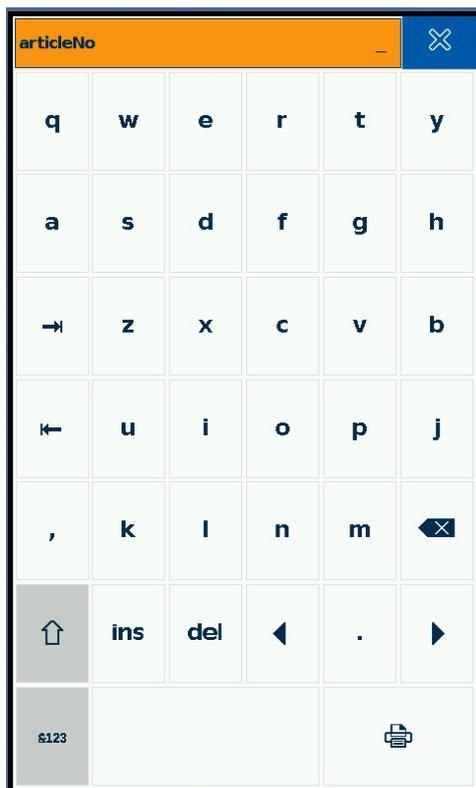
On the left side, the content of the currently selected directory is shown one below the other.

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 and the print order is started.

Administrative Tools: Change to the file manager (Explorer)

Input of variables



The user query can be entered at the cursor position.

Press  to change to the input of number of copies.



6.8 Info Zone

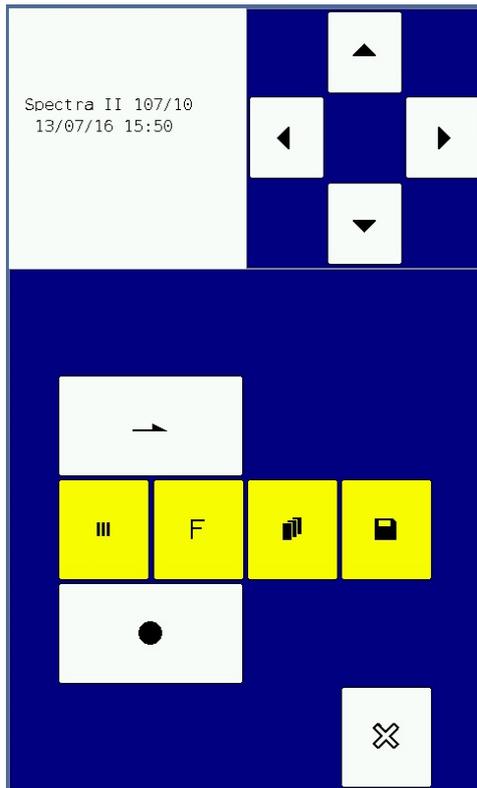
The screenshot shows the 'Info Zone' of a Valentin Spectra II 107/12 printer. At the top, the Valentin logo and 'DRUCKSYSTEME' are displayed alongside the date and time '13.07.16 15:50:16' and the printer model 'Spectra II 107/12'. Below this is a navigation bar with three buttons: 'Home' (house icon), 'Configuration' (list icon), and 'Memory Card' (floppy disk icon). The main content area is titled 'Configuration\Info' and lists the following details:

Printer Model	spectra II 107/12
FirmwareAndBuild	V1.70 Build 2401
Firmware Time of Build	Jul 7 2016
IP Address	10.102. 1.209
Printer Name	LabelPrt01
Hardware Version	OS 2 HW 32

Below the list is a blue bar with a back arrow and the text 'Configuration'. At the bottom, there is a status bar showing 'ETIKETT1 0/1' on the left and a red printer icon on the right. The very bottom of the screen displays the word 'IDLE' in a large, bold font.

The information zone shows details such as printer type, firmware version, printer name in network etc.

6.9 Change to Foil Keyboard



Press long (> 3 s) on the company logo left above, and the display changes to the indication of a conventionalize foil keyboard. The settings can be done by the standard operating panel. Press  to change to the previous view.

7 Maintenance and Cleaning



DANGER!

Risk of death by electric shock!

⇒ Disconnect the label printer from power supply before performing any maintenance work.



NOTICE!

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

Maintenance schedule

Maintenance task	Frequency
General cleaning (see chapter 7.1, page 48).	As necessary.
Cleaning transfer ribbon drawing roller (see section 7.2, page 48).	Each time the transfer ribbon is changed or when the printout is adversely affected.
Cleaning pressure roller (see chapter 7.1, page 48).	Each time the label roll is changed or when the printout and label transport are adversely affected.
Cleaning printhead (see chapter 7.4, page 50).	Each time the transfer ribbon is changed or when the printout is adversely affected.
Cleaning label photocell (see chapter 7.5, page 51).	When exchanging the label roll.
Replacing printhead (see chapter 7.6, page 52).	When errors in the printout occur.



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.

**WARNING!**

Risk of fire by easily inflammable label soluble!

- ⇒ When using label soluble, dust must be completely removed from the label printer and cleaned.

7.1 General Cleaning

**CAUTION!**

Abrasive cleaning agents can damage the label printer!

- ⇒ Do not use abrasives or solvents to clean the outer surface of the label printer.
- ⇒ Remove dust and paper fuzz in the printing area with a soft brush or vacuum cleaner.
- ⇒ Clean outer surfaces with an all-purpose cleaner.

7.2 Cleaning the Transfer Ribbon Drawing Roller

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

1. Open printer cover.
2. Remove transfer ribbon from the label printer.
3. Remove deposits with roller cleaner and a soft cloth.
4. If the roller appears damaged, replace it.

7.3 Cleaning the Pressure Roller

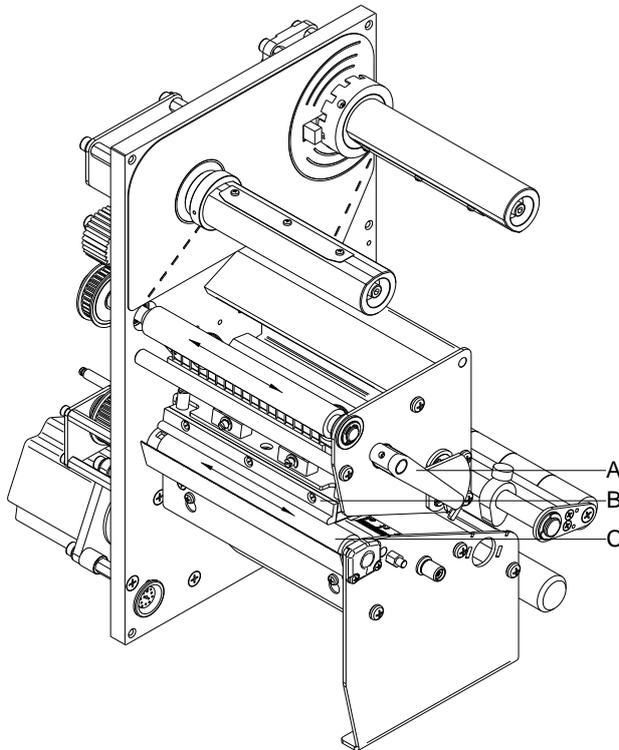
A soiled pressure roller can lead to reduced print quality and can affect transport of material.



CAUTION!

Print roller can be damaged!

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



1. Open printer cover.
2. Turn lever (A) counter clockwise to lift up the printhead (B).
3. Remove labels and transfer ribbon from the label printer.
4. Remove deposits with roller cleaner and a soft cloth.
5. Turn the roller (C) manually step by step to clean the complete roller (only possible when printer is switched off, as otherwise the step motor is full of power and the roller is kept in its position).

Figure 12

7.4 Cleaning 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.

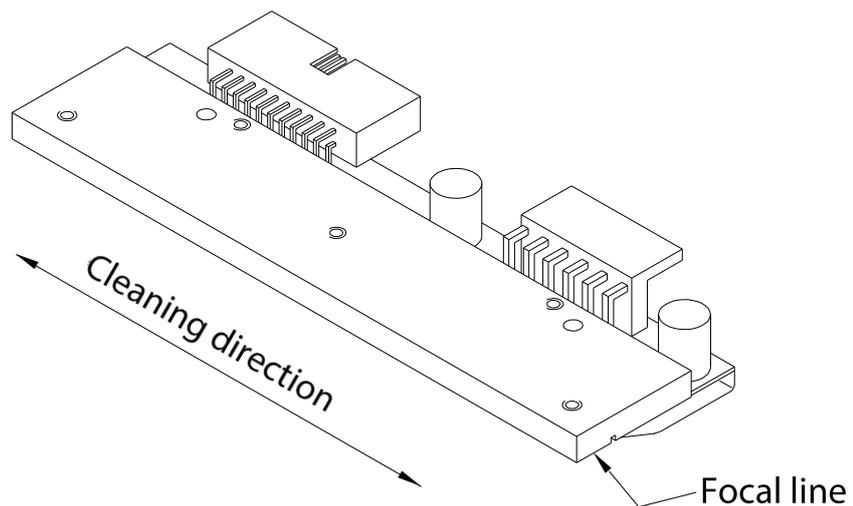


Figure 13

1. Open printer cover.
2. Turn lever (A, in Figure 12) counter clockwise to lift up the printhead.
3. Remove labels and transfer ribbon from the label printer.
4. Clean printhead surface with special cleaning pen or a cotton swab dipped in pure alcohol.
5. Allow printhead to dry for 2-3 minutes before commissioning the printer.

7.5 Cleaning the Label Photocell



CAUTION!

Label photocell can be damaged!

⇒ Do not use sharp or hard objects or solvents to clean the label photocell.

The label photocell can become dirtied with paper dust and this can adversely affect label detection.

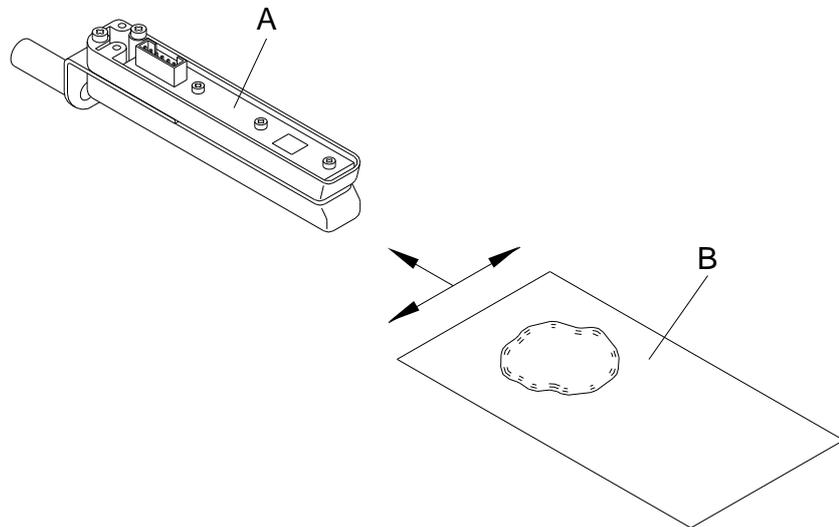


Figure 14

1. Open printer cover.
2. Turn lever counter clockwise to lift up the printhead.
3. Remove labels and transfer ribbon from the label printer.
4. Blow out the photocell (A) with pressure gas spray. Observe strictly the instructions on the spray can!
5. Clean the label photocell (A) additionally with a cleaning card (B) before soaked in pure alcohol. Move the cleaning card from one side to the other (see illustration).
6. Reload labels and transfer ribbon (see chapter 5 Loading Media, page 27).

7.6 Replacing the Printhead (General)



NOTICE!

The printhead (D) is preinstalled on a head plate (A) and aligned at the factory.

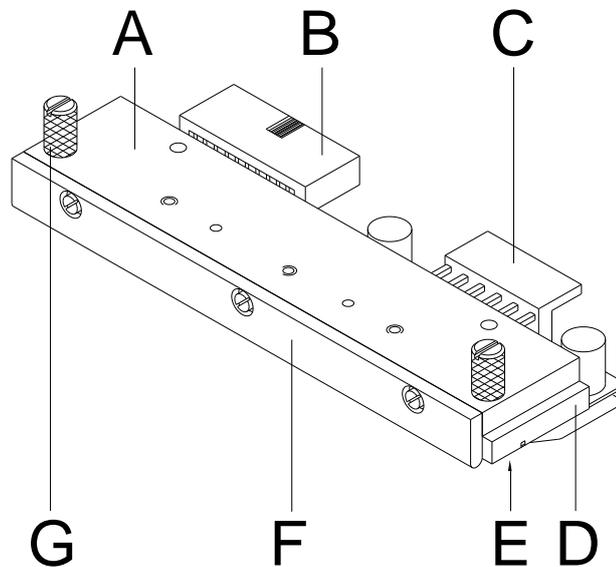


Figure 15

- A Head plate
- B Plug connection signal
- C Plug connection tension
- D Printhead
- E Focal line



CAUTION!

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

- ⇒ Set up printer on a grounded, conductive surface.
- ⇒ Ground your body, e.g. by wearing a grounded wristband.
- ⇒ Do not touch contacts on the plug connections (B, C).
- ⇒ Do not touch printing line (D) with hard objects or your hands.

7.7 Replacing the Printhead (Flat Type)

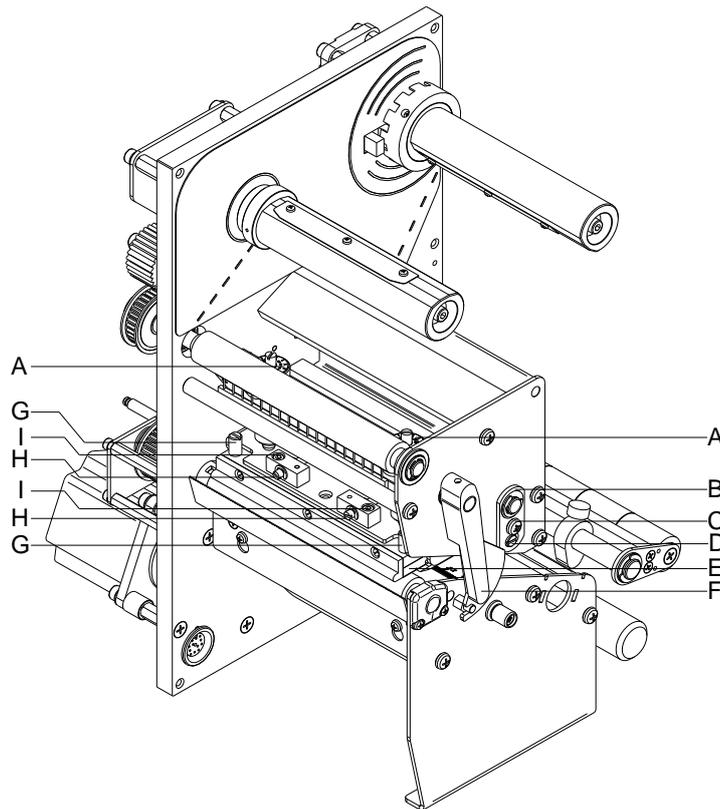


Figure 16

Removing the printhead

1. Remove labels and transfer ribbon from the label printer.
2. When printhead is closed, loosen the screws (G).
3. Turn lever (F) counter clockwise to lift up the printhead (E).
4. If the printhead (E) is not disengaged on the pressure roller, continue loosen the screws (G).
5. Remove the printhead carefully to the front until you can reach the plug connections.
6. Remove plug connections and then remove printhead (E).

Installing the printhead

1. Attach plug connections.
2. Position printhead (E) in printhead mounting bracket in such a way that the pin is secured in the corresponding hole in the head plate.
3. Lightly keep printhead mounting bracket on the printer roller with one finger and check for correct positioning of the printhead.
4. Tighten again screws (G).
5. Reload labels and transfer ribbon (see chapter 5 Loading Media, page 27).
6. Check resistance value on the type plate of printhead and if necessary change the value in the *Service functions/heater resistance*.

7.8 Adjusting the Printhead (Flat Type)

Parallelism

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

1. Loosen the screws (I, Figure 16) with a hexagon key by approx. $\frac{1}{4}$ rotations.
2. Adjust the parallelism with the adjusting screws (H, Figure 16).
Clockwise = printhead moves backwards
Counter clockwise = printhead moves forwards
3. Clockwise = printhead moves backwards
Counter clockwise = printhead moves forwards
4. Tighten again screws (I, Figure 16).
5. Start a print order with approx. 10 labels and control the correct passage of transfer ribbon.

Pressure balance right/left

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

1. Loosen screw (C, Figure 16) with a screwdriver by approx. $\frac{1}{4}$ rotations.
2. In order to achieve a pressure balance, turn the excentric bolt (D, Figure 16) as long as the printing result comes up to your full expectation.
3. Tighten again screw (C, Figure 16).
4. Start a print order with approx. 10 labels and control the correct passage of transfer ribbon.

Pressure

Increasing the head contact pressure leads to an improvement of the print image density on the corresponding side and to a shifting of the ribbon feed path in the corresponding direction.



CAUTION!

Damage of printhead by unequal use!

⇒ Change factory settings only in exceptional cases.

The selection of the smallest value can optimise the life cycle of printhead.

1. Turn pressure screws (A, Figure 16) to change the pressure of printhead.
2. Turning the pressure screws (A, Figure 16) as far as they will go in clockwise direction results in a pressure increase of 10N in contrast to the factory setting.
3. Turning the pressure screws (A, Figure 16) from the limit stop counter clockwise to the corresponding scale value (see table) result in the factory settings.

Printhead	Scale value
Spectra II 107	12
Spectra II 108	6



NOTICE!

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

7.9 Replacing the Printhead (Corner Type)

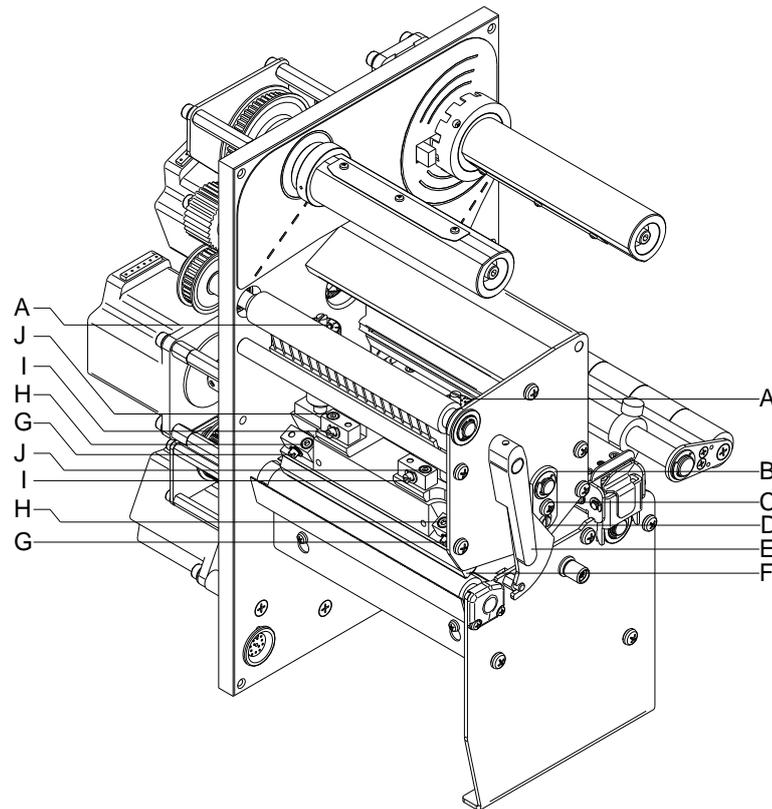


Figure 17

Removing the printhead

1. Remove labels and transfer ribbon from the label printer.
2. When printhead is closed, loosen the hex (Allen) screws (H).
3. Turn lever (E) counter clockwise to lift up the printhead (F).
4. If the printhead (F) is not disengaged on the pressure roller, continue loosen the hex (Allen) screws (H).
5. Remove the printhead carefully to the front until you can reach the plug connections.
6. Remove plug connections and then remove printhead (F).

Installing the printhead

1. Attach plug connections.
2. Position printhead in printhead mounting bracket in such a way that the pin is secured in the corresponding hole in the head plate.
3. Lightly keep printhead mounting bracket on the printer roller with one finger and check for correct positioning of the printhead.
4. Tighten again screws (H).
5. Reload labels and transfer ribbon (see chapter 5 Loading Media, page 27).
6. Check resistance value on the type plate of printhead and if necessary change the value in the *Service functions/heater resistance*.

7.10 Adjusting the Printhead (Corner Type)

Parallelism

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

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

1. Loosen the screws (H or J, Figure 17) with a hexagon key by approx. $\frac{1}{4}$ rotations.
2. Adjust the parallelism with the adjusting screws (G or I, Figure 17).
Clockwise = printhead moves backwards
Counter clockwise = printhead moves forwards
3. Adjust the parallelism as long as the printing result comes up to your full expectation.
4. Tighten again screws (H or J, Figure 17).
5. Start a print order with approx. 10 labels and control the correct passage of transfer ribbon.

Pressure balance right/left

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

1. Loosen screw (C, Figure 17) by approx. $\frac{1}{4}$ rotations.
2. In order to achieve a pressure balance, turn the excentric bolt (D, Figure 17) as long as the printing result comes up to your full expectation.
3. Tighten again screw (C, Figure 17).
4. Start a print order with approx. 10 labels and control the correct passage of transfer ribbon.

Pressure

Increasing the head contact pressure leads to an improvement of the print image density on the corresponding side and to a shifting of the ribbon feed path in the corresponding direction.

**CAUTION!**

Damage of printhead by unequal use!

⇒ Change factory settings only in exceptional cases.

The selection of the smallest value can optimise the life cycle of printhead.

1. Turn pressure screws (A, Figure 17) to change the pressure of printhead.
2. Turning the pressure screws (A, Figure 17) as far as they will go in clockwise direction results in a pressure increase of 10N in contrast to the factory setting.
3. Turning the pressure screws (A, Figure 17) exactly one rotation from the right stop position counter clockwise results in the factory settings.

**NOTICE!**

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

8 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 X 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 code type	Selected code is not available.	Check code type.
5 Unvalid position	Selected position is not available.	Check position.
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 (front printhead). Defect at the transfer ribbon photocell (front 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 numer	Received line number is invalid at RS-232 and parallel interface.	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 text is res. are not available in the selected font.	Change text. 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 number	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 Check digit calculation	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	F 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	No print CF found.	Check CF assembly on CPU.
35 Cover 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 Not formatted	CF Card not formatted.	Format CF card.
44 Delete current directory	Attempt to delete the actual directory.	Change directory.
45 Path too long	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 interface	No CF card drive found.	Check connection of CF card drive. Contact your distributor
60 No CF card	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 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 releaser	External print release signal is missing.	Check input signal.
67 Row too long	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 exchange (if necessary). Reduce print speed.
70 Scanner data	Scanned data does not correspond to the data which is to print.	Exchange 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 Page not defined	The page is not defined.	Check the print definition.
74 Format user guiding	Wrong format for customised 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 synchronisation. 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	Label ID definition is missing.	Define label 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 recognise 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	Sensor signal up is missing (option APL 100).	Check input signals / compressed-air supply.
101 Lower position	Sensor signal down is missing (option APL 100).	Check input signals / compressed-air supply.
102 Vacuum plate empty	Sensor does not recognise a label at vacuum plate (option APL 100).	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. Tag data do not match the Tag type in the printer.	Adapt data or use the correct Tag type.
107 RFID invalid	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	Error while using applicator.	Check applicator.
114 Left position	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	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	The print position is not correct.	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 (rear printhead). Defect at the transfer ribbon photocell (rear 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 found	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.

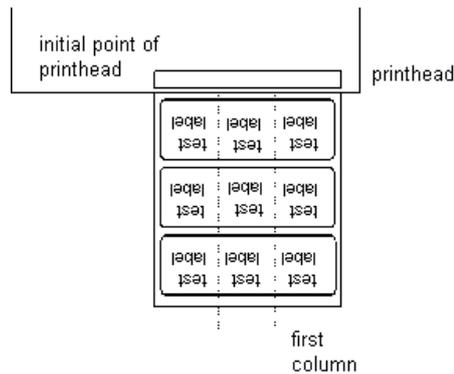
Error message	Cause	Remedy
123 Print asynchronous	<p>The label photocell do not work in the order as it is expected according to print data.</p> <p>The settings of the photocell are not correct.</p> <p>Settings of label size and gap size are not correct.</p> <p>No label found at the rear printhead.</p> <p>Soiled label photocell.</p> <p>Labels not inserted correctly.</p>	<p>Check label size and gap size.</p> <p>Check label photocell settings.</p> <p>Check correct loading of label material.</p> <p>Insert new label roll.</p> <p>Clean the label photocell.</p> <p>Check if labels are inserted correctly.</p>
124 Speed too slow	<p>The print speed is too slow.</p>	<p>Increase the speed of customers' machine.</p>

9 Additional information

9.1 Column printing

With this printer several columns can be printed, i.e. the information of one column can be printed several times (depending on its width) on a label. Caused by this the use of the complete print width is possible and the generating time is enormously reduced.

For example 4 columns with a width of 25 mm or 2 columns with a width of 50 mm can be printed onto a label with a width of 100 mm. Please note that the first label is always the one with the largest x coordinate, i.e. it has the largest distance to the printhead.



Setting the print of several columns

Press key **F** to access the function menu.

Press key  as long as you arrive the menu *Label layout*.

Press key  to confirm the selection.

Press key  as long as to the menu item *Width/Columns*.

Press keys  and  to set the label width. The *Width* is the width of one column, e.g. 20.0 mm.

Press keys  and  to arrive the *Column* input field.

Press keys  and  to change the number of columns, e.g. 4 columns with a label width of 20.0 mm.

Press key  to start the print with input of number of labels and number of lines. The number of labels corresponds to the number of labels that should be printed.

e.g. Columns: 3, Items: 4



The first four labels were printed but not label 5 and 6.

9.2 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 label can be further processed without any loss of data. Moreover a print order can be interrupted and to be continued after switching on the printer 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.

Saving the current label

In case the *Hotstart* function is set to on, at the start of a print order the data of the current label is saved to the corresponding directory of the CF card.

However the following conditions have to be fulfilled:

- CF card inserted in drive A.
- Enough free storage space onto CF card.

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

Saving the print order state

At switching off the printer 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.
- Enough free storage space onto CF card.

Loading a label and print order state

When restarting the label printer (if the function *Hotstart* is activated) the saved label 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 label printer a CF card has to be inserted in the appropriate drive. If the data cannot be loaded an error message appears.

Starting the print order

In case at switching off the label printer a print order was active, then a print start is released automatically and the required res. actual number of printed labels is refreshed.

In case the print order was stopped at switching off the label printer, it is again set to the stopped mode after switching on the label printer anew.

In case a customized entry was active during switching off the label printer, the window for the first customized variable is displayed.

Refreshing the 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 labels. 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 label they have to be saved onto CF card.

9.3 Password

Example 1: The supervisor programs a CF Card directly with the printer. He stores 10 different labels. As well he adjusts the printer parameters, like contrast, speed, etc. to the corresponding values. The user is only supposed to read the labels from CF card and to print them. Therefore the supervisor blocks the function menu and the entry function by a password.

Example 2: The printer is connected to a PC. The user is only supposed to take the labels dispensed by the printer and stick them on. To prevent, that the labels or the printer set-up will not be changed, the supervisor blocks all printer functions (e.g. function menu, entry menu, etc.) by a password.

Example 3: The user has to change several texts before printing. It is not allowed to change any masks (fonts, position, etc.). Therefore the supervisor blocks the entry of mask and the function menu. By this means the user indeed can print labels, but the printer set-up and the masks of the labels can't be changed.

To receive a most flexible password protection, the printer functions will be divided into several function groups:

1. Function menu: In the function menu the printer parameters can be changed (contrast, speed, mode, ...). The password protection prevents modifications at the printer settings.

2. CF card: With the functions of your CF 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

3. Print functions: With key **quant** a print can be produced. In case the printer 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.

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

Definition of password

In case no password is defined res. the password protection is not activated, all functions can be used. In the function menu you will find the menu item 'Password', where the password can be entered and the password protection activated.

Press key  to change to the function menu.

Press key  as long as you arrived the menu *Device settings*.

Press key  to confirm the selection.

Press key  as long as you arrived the menu item *Password*.

Press key  to confirm the selection.

F	Function menu
CF	CF functions
D	Print functions

If the password protection is active but the function menu not protected, first of all the password (four-digit number, possible values 0000 - 9999) has to be entered. Now the modifications can be made. The user can define the password in the first line (four-digit number).

Press key  to continue.

Press keys  and  to activate/deactivate (Yes/No) the password protection.

Press key  to change to the second line.

Press keys  and  to block/open individual function groups.

Press keys  and  to change to the next group.

F:	Function menu	0...open
		1...locked
CF:	CF card	0...open
		1...only reading access
		2...access blocked
D:	Printer guiding	0...open
		1...open
		2...no manual print release

Activate blocked function:

In order to execute a blocked function, first of all the valid password has to be entered.

Press key  to confirm the entry. If the correct password is entered then the desired function can be executed. If a wrong password is entered, no error message appears but the printer returns to the main menu.

9.4 Backfeed/Delay

Backfeed modes

In continuous dispensing mode (IO dynamic continuous, IO static continuous, IO photocell continuous) no optimised backfeed is possible. Because of the fact when changing the print order, then the current label in the offset sector is already printed from the old print order.

With activated double cut no optimised backfeed is possible.

In the sector that is printed when preprint the following label, no date/time variable should be existing, because this could be refreshed before the next start impulse.

Standard

Dispenser: After printing the label, it is driven into the dispensing offset and waited there, until the label was removed (photocell) or a new start signal is given (IO dynamic). Afterwards it is again backtracked to the beginning of label and then the next label is printed.

Cutter: After printing the label, it is driven into the cutter offset; the label is cut and then backtracked immediately to the beginning of label (if an operating mode with backfeed is selected). Afterwards the next label is printed, if necessary.

Tear-off edge: After printing the last label of a print order it is driven into the tear-off offset and the label res. labels can be taken away. When starting a new print order, first it is backtracked again to the beginning of label and then the next label is printed.
If a following print order is available before driving into the tear-off offset, then it is not driven into tear-off offset but the following label is directly printed.

Automatic

Dispenser: After printing the label it is driven into the dispensing offset and then backtracked to the beginning of label either immediately or after the set delay time. When releasing a new start signal (IO dynamic) the next label is immediately printed.

Cutter: This is the same function as for 'backfeed standard' as it is always backtracked immediately to the beginning of label.

Tear-off edge: After printing the last label of a print order it is driven into the tear-off offset and then backtracked to the beginning of label either immediately or after the set delay time. When starting a new print order then the next label is immediately printed.
If a following print order is available before driving into the tear-off offset, then it is not driven into tear-off offset but the following label is directly printed.

No backfeed	Dispenser:	After printing the label it is driven into the dispensing offset and there waited. When releasing a new start signal (IO dynamic) then the next label is immediately printed. Because of the fact that the label is already in the offset, the label is only printed from beginning of offset position, i.e. at the definition of label an accordingly large range must be left free at the top margin of label, because these data are otherwise not printed.
	Cutter:	This is the same function as for 'backfeed standard' as it is always backtracked after cutting immediately to the beginning of label.
	Tear-off edge:	After printing the last label of a print order it is driven into the tear-off offset. When starting a new print order, the next label is immediately printed. Because of the fact that the label is already in the offset, the label is only printed from beginning of offset position, i.e. at the definition of label an accordingly large range must be left free at the top margin of label, because these data are otherwise not printed. If a following print order is available before driving into the tear-off offset, then it is not driven into tear-off offset but the following label is directly printed.
Optimised backfeed	Dispenser:	After printing the label, during driving into dispensing offset the following label is 'pre-printed', if this is already available (generated). When releasing a new start signal (IO dynamic) the already 'pre-printed' label is printed to the end and when driving into the dispenser offset the following label is again 'pre-printed'. In case the following label is not yet available or at the last label of a print order, the dispenser offset is driven as until now, and then for the next label before printing the backfeed to the beginning of label is executed.
	Cutter:	After printing the label, during driving into the cutter offset the following label is 'pre-printed', if this is already available (generated). After the cut it is not backtracked but the already 'pre-printed' label is printed to the end and when driving into the cutter offset the following label is again 'pre-printed'. If the following label is not yet available or at the last label of a print order, the cutter offset is driven as until now, then cut and afterwards the backfeed to the beginning of label is executed.
	Tear-off edge:	This is the same function as for 'backfeed standard' as it is only driven into the tear-off offset at the last label of a print order, if no following print order is available.

9.5 Photocells



NOTICE!

When using reflection photocells you should observe that the label printer cover is closed and in this way other light (e.g. working lamp) on the photocell is prevented.

Transmission photocell normal

For this photocell type the transmitter is at the top res. the receiver at the bottom, i.e. the infra-red light is sent from the top. In this way the label detection is also from the top. This photocell type is used for standard adhesive labels with gap.

Reflexion photocell normal

For this photocell type the transmitter and receiver are at the bottom, i.e. the light is reflected by the label and taken over from the receiver. This photocell type is used for white (light) continuous labels with a black (dark) bar. The bar is the separator, i.e. it indicates the position of gap and in this way the label start.

Transmission photocell inverse

For this photocell type the transmitter is at the top res. the receiver at the bottom, i.e. the infra-red light is sent from the top. The label detection is, same as for the **transmission photocell normal**, from the top. However, it is printed differently as for normal photocells, in the translucent place; the label printer recognizes the opaque place as gap. This photocell type is used frequently when printing foils.

Reflexion photocell inverse

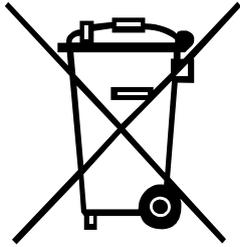
For this photocell type the transmitter and receiver are at the bottom, i.e. the light is reflected by the label and taken over from the receiver. This photocell type is used for black (dark) continuous labels with a white (light) bar. This bar is the separator, i.e. it indicates the position of gap and in this way the start of label.



NOTICE!

When using transmission photocells inverse, the label printer must measure a difference of 2.5 V and for reflection photocells inverse 1 V between translucent and opaque material. Otherwise the label printer does not recognize a difference between label and gap (bar).

10 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.

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

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