valentin
ETIKETTENDRUCKSYSTEME

Vario III Series

OPERATING MANUAL

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Carl Valentin label printers comply with the following safety guidelines:

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

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ETIKETTENDRUCKSYSTEME

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

Phone +49 7720 9712-0
Fax +49 7720 9712-9901
E-mail info@valentin-carl.de
www.valentin-carl.de

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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 6 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 with the keys of the foil keyboard. At each time the graphic display shows the current status.

By the use of a 32 Bit processor and a large main memory of 16MB also for large labels (6000 mm) a fast print is possible.

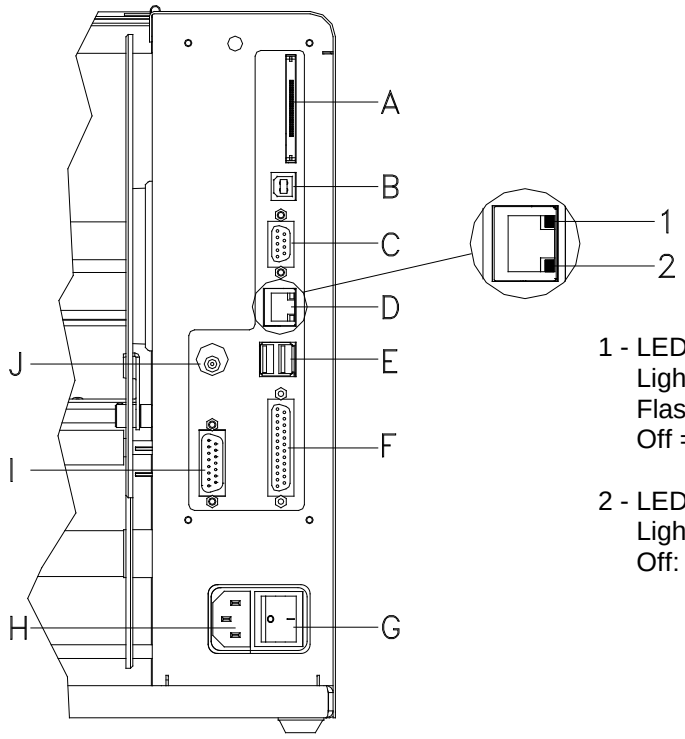
An enormously high print quality is obtained by most modern printhead technology.

By a new-developed electronics a maximum print speed of up to 200 mm/s can be achieved.

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 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)



1 - LED orange
Lighting = Connection active
Flashing = Data transfer
Off = No connection

2 - LED green
Lighting: Speed 100 MBit
Off: Speed 10 MBit

Figure 1

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

2 Safety Instructions

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

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

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

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

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

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

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

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 save 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 9 (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.

Instructions for lithium battery

CPU of printer is equipped with a lithium battery (type CR 2032) for which the battery regulation is to apply. This regulation plans that unloaded batteries have to be given to used battery collecting containers of trade and public carries. In case that batteries were not completely discharged you have to make arrangements for short-circuits. At a shutdown of printer the battery has to be disposed in either case separately from printer.

DANGER!

Danger of life by explosion!

⇒ Use non-conducting tools.

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% to −10% of nominal value

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

Allowable distortion factor of power line voltage: <=5%

Anti-Interference measures:

In case your net is infected (e.g. by using thyristor controlled machines) anti-interference measures have to be taken. 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: 09-2003
- Interference field power according to EN 55022: 09-2003
- System perturbation according to EN 61000-3-2: 09-2006
- Flicker according to EN 61000-3-3: 1955 + A1:2001 + A2:2005

Stray radiation and immunity from disturbance

Immunity to interference according to EN 61000-6-2: 2005 industrial sector

- Stray radiation against discharge of static electricity according to EN 61000-4-2: 12-2001
- Electromagnetic fields according to EN 61000-4-3: 11-2003, ENV 50204: 03-1995
- Fast transient burst according to EN 61000-4-4: 07-2005
- Surge according to EN 61000-4-5: 12-2001
- High-frequency tension according to EN 61000-4-6: 12-2001
- Voltage interruption and voltage drop according to EN 61000-4-11: 02-2005

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 to +80 °C.

It is only allowed to connect devices which fulfil the request 'Safety Extra Low Voltage' (SELV). These are generally devices which are checked corresponding to EN 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 Centronics - 3 m (with shielding)
with USB - 5 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 °C (operation): Min. +5 Max. +35

Ambient temperature °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

	Vario III 103/8 T	Vario III 104/8	Vario III 107/12	Vario III 107/24	Vario III 108/12 T
Print resolution	203 dpi	203 dpi	300 dpi	600 dpi	300 dpi
Max. print speed	250 mm/s	250 mm/s	250 mm/s	100 mm/s	250 mm/s
Print width	104 mm	104 mm	105.7 mm	105.7 mm	108.4 mm
Passage width	110 mm	110 mm	110 mm	110 mm	110 mm
Printhead	Flat Type[1]	Flat Type[2]	Flat Type[2]	Flat Type[2]	Flat Type[1]
Labels					
Labels, continuous rolls or fan-fold	paper, cardboard, textile, synthetics				
Max. material weight	220 g/m² (larger on demand)				
Min. label width	15 mm				
Min. label height					
Standard	6 mm				
Cutter/dispenser mode	15 mm				
Max. label height (higher on demand)	6000 mm	6000 mm	3000 mm	1000 mm	3000 mm
Max. roll diameter					
Internal unwinder	200 mm				
Internal rewinder	100 mm				
Core diameter	40 mm / 75 mm (option)				
Winding	outside or inside				
Label sensor					
Standard	Transmission				
Option	Reflexion from bottom or top				
Transfer ribbon					
Ink	outside or inside				
Max. roll diameter	Ø 80 mm				
Core diameter	25.4 mm / 1″				
Max. length	300 m				
Max. width	110 mm				
Dimensions (mm)					
Width x height x depth	230 x 310 x 450				
Weight	16 kg				
Electronics					
Processor	High Speed 32 Bit				
RAM	16 MB / 64 MB (on demand)				
Slot	for Compact Flash card Type I; for Wireless LAN card				
Battery cache	for Real-Time clock (storage of data with shut-down)				
Warning signal	acoustic signal when error				
Inerfaces					
Serial	RS-232C (up to 115200 Baud)				
Parallel	Centronics (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)	card 802.11b/g WEP/WPA PSK (TKIP)				
Operation data					
Power supply	110-230 V / 50-60 Hz				
Max. power consumption	max. 150 VA				
Operating temperature	5-35 °C				
Humidity	max. 80% (non condensing)				

[1] for thermal direct
[2] for thermal transfer

Operation panel	**Vario III 103/8 T**	**Vario III 104/8**	**Vario III 107/12**	**Vario III 107/24**	**Vario III 108/12 T**
Keys	test print, function menu, quantity, CF Card, feed, enter, 4 x cursor, numeric keypad				
LCD display	graphic display 132 x 64 Pixel white backlight				
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 6 Vector fonts/TrueType fonts 6 proportional fonts other fonts on demand				
Character sets	Windows 1250 up to1257, DOS 437, 850, 852, 857, UTF-8 all West and East European Latin, Cyrillic, Greek and Arabic 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	6 BITSTREAM® fonts size in width and height 1-99 mm variable zoom orientation 360° in steps of 90°				
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	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° and 270°. Optionally with check digit and human readable line.				
Software					
Configuration	ConfigTool				
Process control	Netstar PLUS				
Label software	Labelstar LITE Labelstar PLUS				
Windows driver	Windows XP 32/64 Bit, Windows Server 2003 (R2) 32/64 Bit Windows Vista 32/64 Bit, Windows Server 2008 32/64 Bit Windows 7 32/64 Bit, Windows Server 2008 R2 64 Bit				

Standard equipment

- 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
- Thermal and 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)
- Slot for CF card
- Windows printer driver on CD ROM
- Labelstar LITE on CD ROM

Optional equipment

- Tear-off edge
- Cutting unit
- Dispensing unit with photocell
- Dispensing unit without photocell
- Label photocell (reflexion from bottom or top)
- External rewinder for labels PR 45V
- External unwinder for labels PA 50A
- WLAN interface
- Dispenser I/O
- RFID
- Scanner

3.1 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

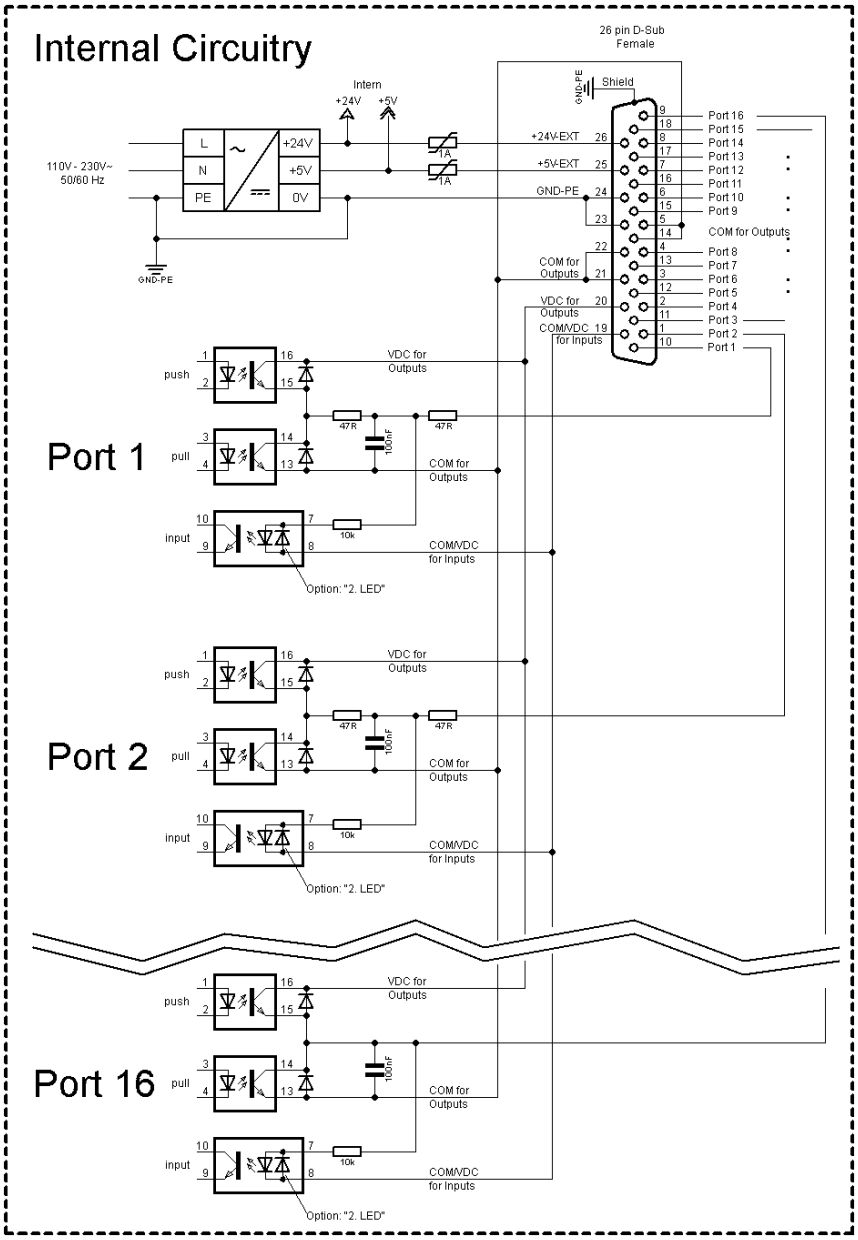


Figure 2

Configuration of D-Sub socket

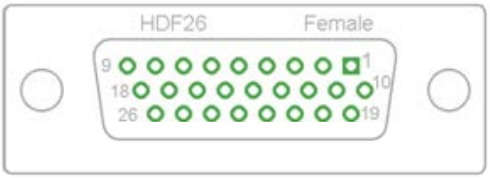


Figure 3

Identification	Pin	Description / Function
Port 1	10	Print start (Input)
Port 2	1	Cut (Input)
Port 3	11	Counter Reset (Input)
Port 4	2	External synchronisation of label position (Input)
Port 5	12	No function
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	Label available at dispensing photocell (Output) in print mode dispensing photocell
Port 12	7	Single print (Output)
Port 13	17	Ready (Output)
Port 14	8	RFID error (Output)
Port 15	18	Scanner: bar code not readable (Output) - option scanner only
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.

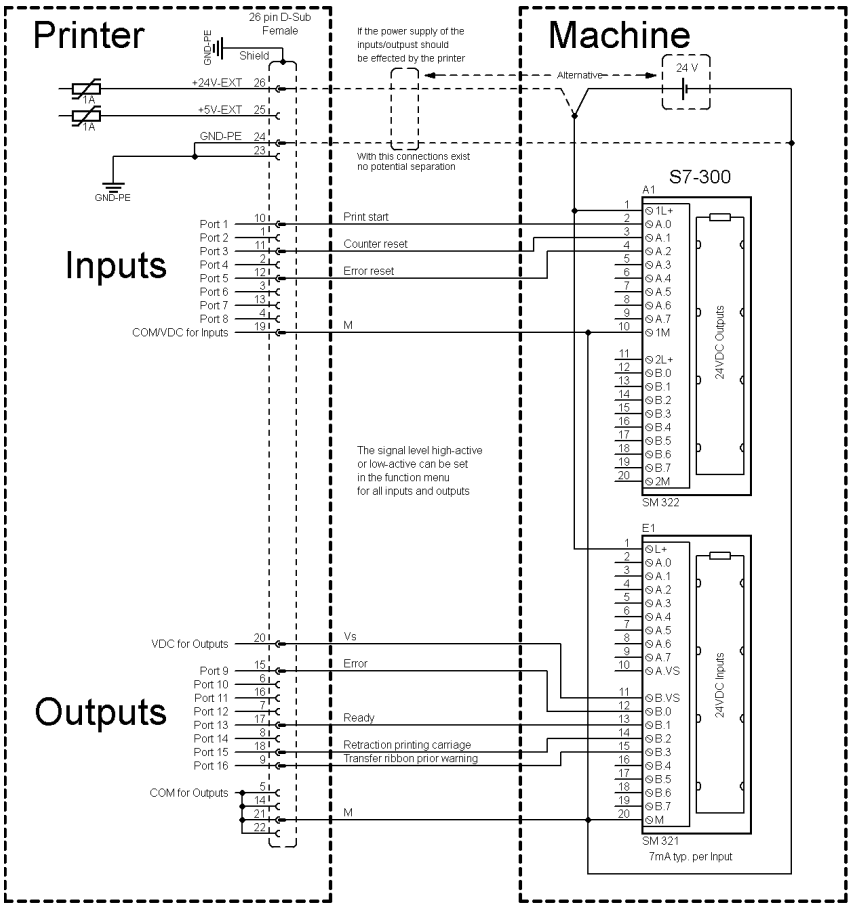


Figure 4

Example 2 Device connection to a operating panel.

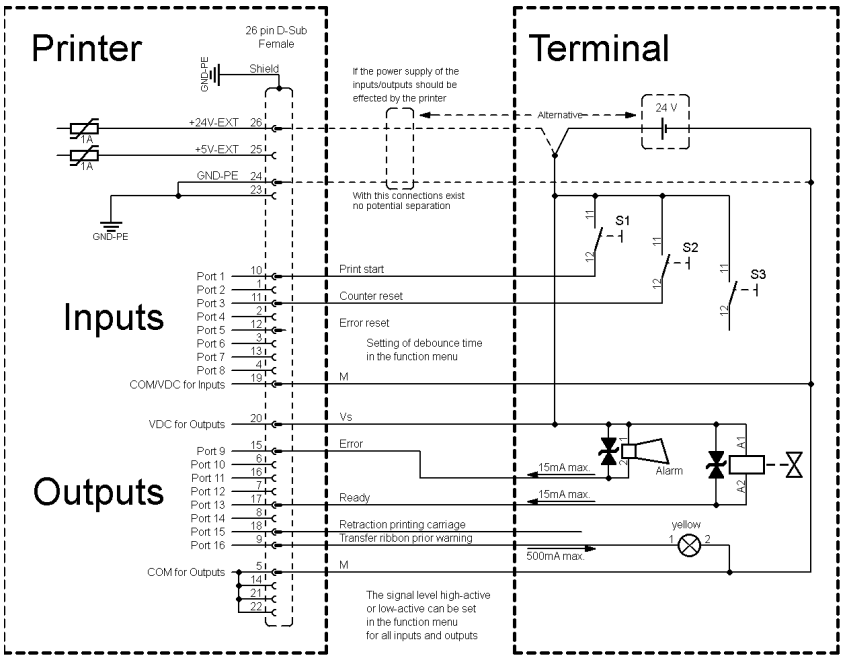


Figure 5

Example 3

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

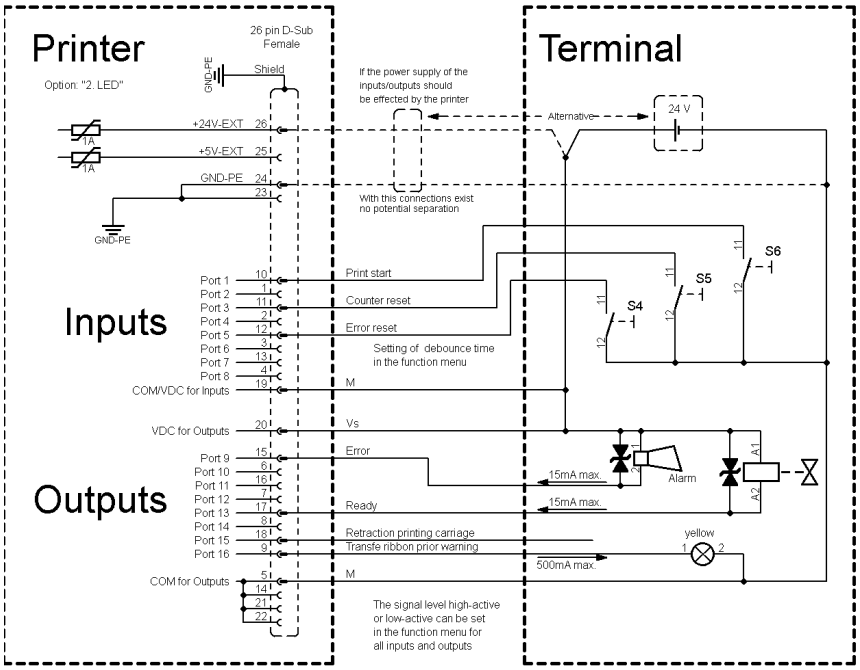


Figure 6

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.

3.2 Plug & Play

Plug & Play capable devices can be recognized automatically at parallel ports, USB-IEEE 1394- or infra-red connections but the last both are not important for our devices.

The following table shows the Plug & Play capability of the different operating systems.

Port		Windows							
		95	98	Me	NT4	2000	XP	Vista	7
LPT	Support	✓	✓	✓	✓	✓	✓	✓	✓
	Recognition by	Boot procedure, Device manager			✗	Installation			
USB	Support	✗	✓	✓	s.b.	✓	✓	✓	✓
	Recognition by	✗	Hot Plug & Play		s.b.	Hot Plug & Play			

The table above shows that USB provides the recognition during the connection in current operating mode, the so-called Hot-Plug & Play. Depending on the operating system, for the parallel interface the different possibilities are given:

- **Windows 95 / 98 / Me**
  Devices can be recognized during the starting procedure of Windows or by the Search for new hardware by means of the hardware wizard.
- **Windows 2000 / XP / Vista / 7**
  Devices can be recognized during the starting procedure of Windows or by the Search for new hardware by means of the hardware wizard or if the option 'Automatic recognition and installation of Plug&Play printer' and/or 'Search automatically for new hardware components and install' is activated.

NOTICE!

If a driver is installed outside of the Plug & Play recognition, Windows reports at each restart that a new device was found. In this case, the driver is to be installed anew by the Wizard. If the driver is certified for Windows, the reinstallation is executed automatically.

NOTICE!

Windows NT 4.0 does not support USB devices. However, some distributors offer drivers that support USB (without Plug & Play). Such a driver which suits to our devices is offered from BSQUARE.
For more information, visit www.bsquare.com or contact

BSQUARE Headquarters (USA)
888-820-4500
sales@bsquare.com

BSQUARE (Europe)
+49 (811) 600 59-0
europe@bsquare.com

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 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 de 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 Switching the Label Printer On and Off

Once all connections have been made:

⇒ Switch label printer on with the power switch.
After switching on the label printer the main menu appears showing the printer type, current date and time.

4.4 Initiation of the Label Printer

After switching on the label printer the main menu appears which shows the printer type, current date and time.

Insert label material and transfer ribbon (see chapter 5. Loading Media, page 29).

Go to menu *Label layout*, select menu item *Measure label* and start measuring (see chapter 6.4 Label Layout, page 41).

Press key  to finish 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

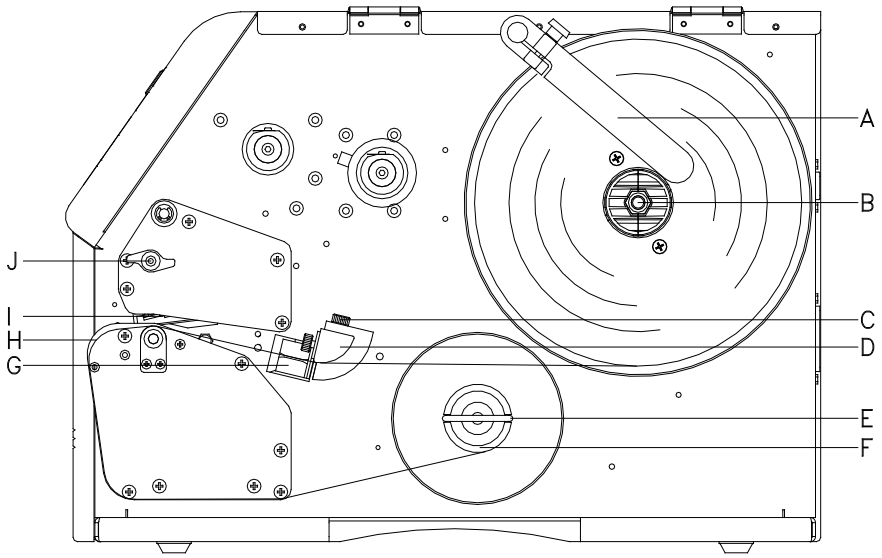


Figure 7

NOTICE!

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

1. Open the printer cover.
2. Open the 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 (D).
   Take care that the material 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 (E) 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

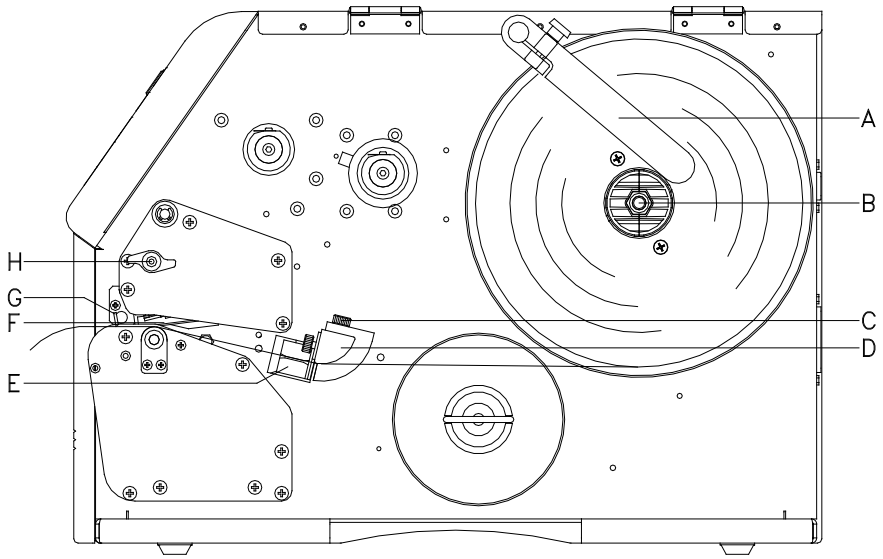


Figure 8

1. Open the printer cover.
2. Open the printhead (F) 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 (F) down, turn the pressure lever (H) in clockwise direction until it locks.
8. In front of the printhead the tear off edge (G) is visible.
9. Enter the offset value in menu *Printer Initialisation/Tear off* (see chapter 6.3, page 40).
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

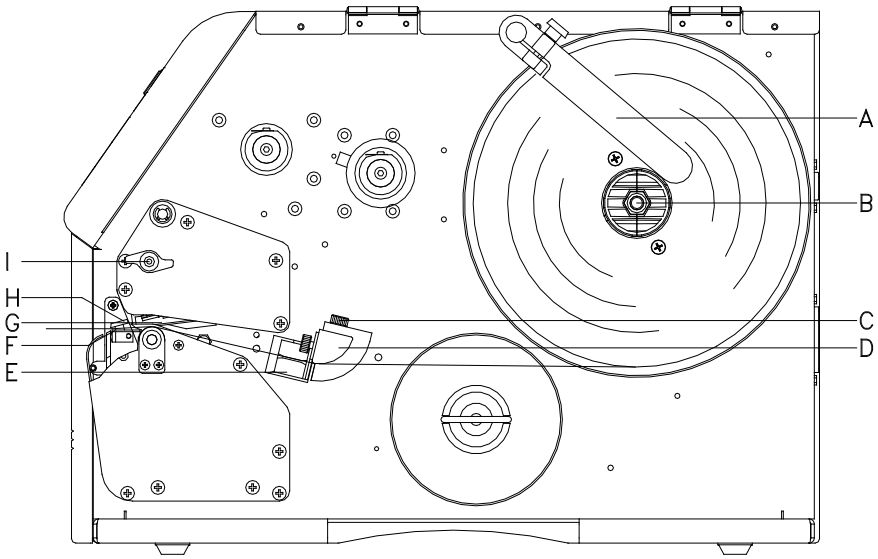


Figure 9

1. Open the printer cover.
2. Open the printhead (G) 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 (G).
   Take care that the label runs through the photocell (E).
7. Lead the label material between the inserting angle (F) and the cutter ledge (H).
8. To move the printhead (G) 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

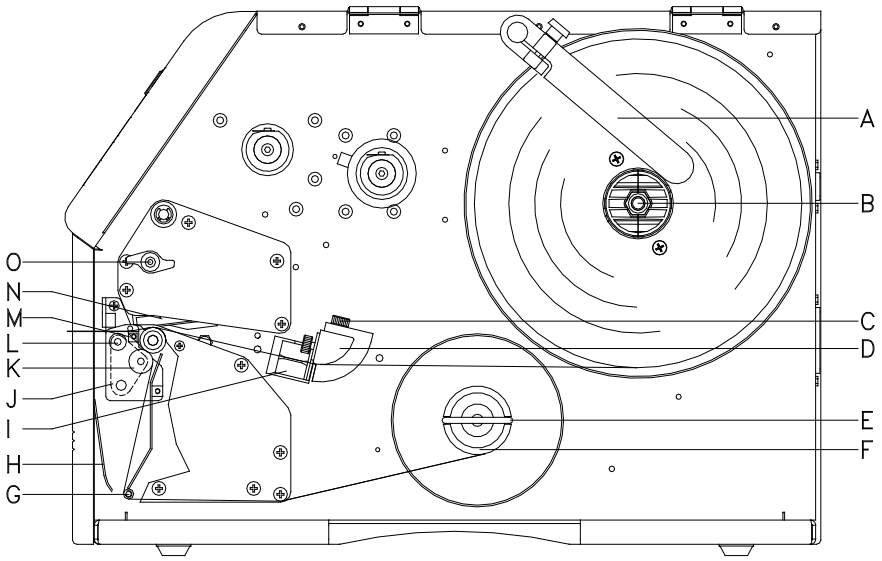


Figure 10

1. Remove the cover plate (H) by turning it to the front.
2. Open the printer cover.
3. Open the printhead (N) by turning the pressure lever (O) anticlockwise.
4. Remove the outside label mounting plate (A).
5. Load the label roll with inner winding (minimum label height = 15 mm) onto the unwinding roll (B).
6. Attach again the label mounting plate (A).
7. Lead the label material below the label guiding (D) and printhead (N). Take care that the labels run through the photocell (I).
8. Lift the dispensing whip (J) to the front/bottom by pulling the shaft at the side (L) to the inside.
9. To move the printhead (N) down, turn the pressure lever (O) in clockwise direction until it locks.
10. Adjust the limit stops (C) of the label guiding to the width of material.
11. Strip some labels from the backing paper and lead the paper over the dispenser ledge (M) and behind the plastic roll (K).
12. Press again the dispensing whip (J) to the top and lock it.
13. Place the backing paper around the shaft (G) and fix it with the clamp (E) at the rewinding unit (F).
14. Enter the offset value in menu *Dispenser I/O/Offset* (see chapter 7.2, page 57).
15. 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.

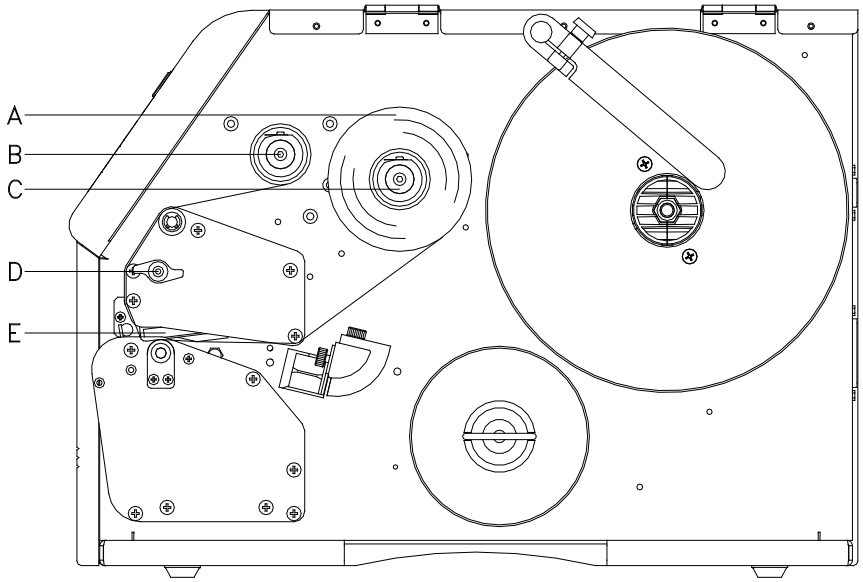


Figure 11

NOTICE!

Before a new transfer ribbon roll is loaded, the printhead must be cleaned using printhead and roller cleaner (97.20.002). 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 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.

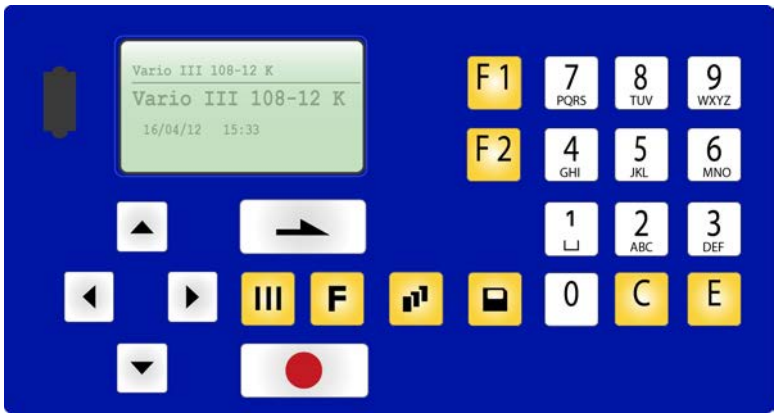
6. Fix the ribbon with an adhesive tape in rotating direction at the empty roll of the rewinding roll (B).
7. To move the printhead (E) down, turn the pressure lever (D) in clockwise direction until it locks.
8. Close the printer cover.

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.

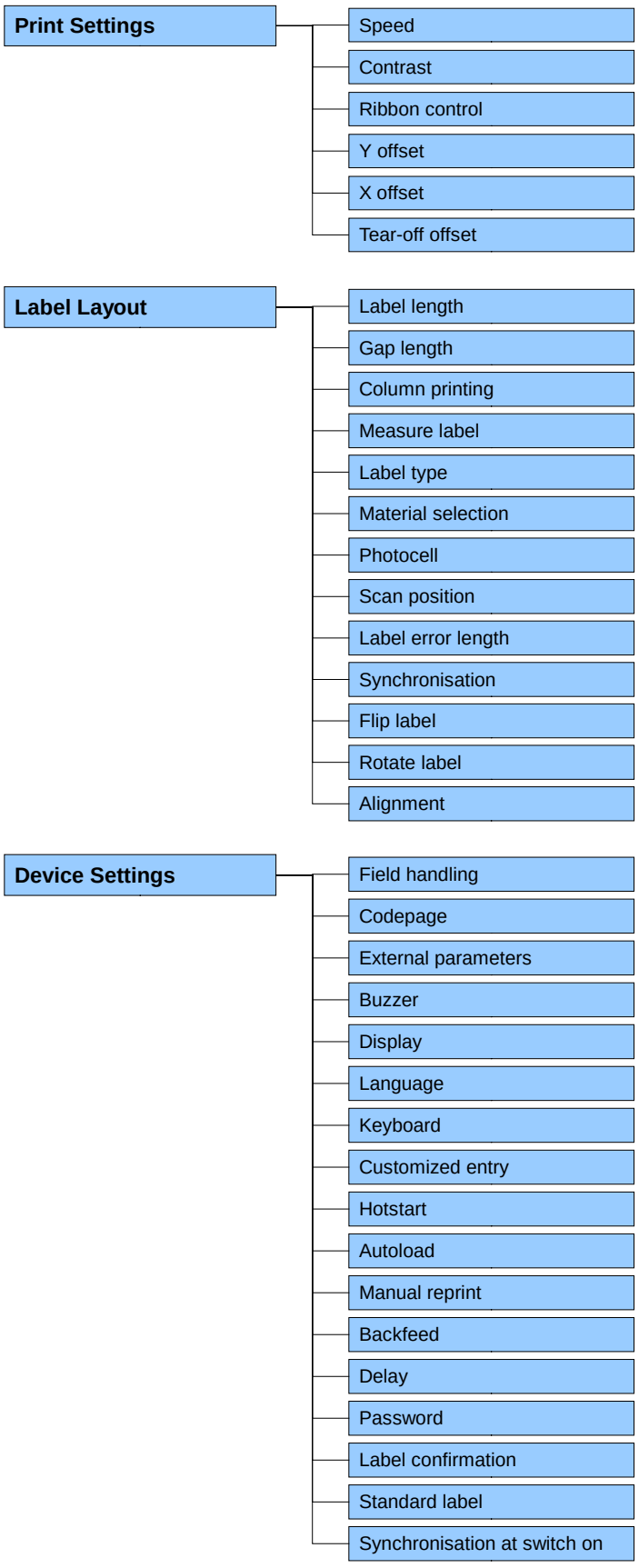
6 Function Menu

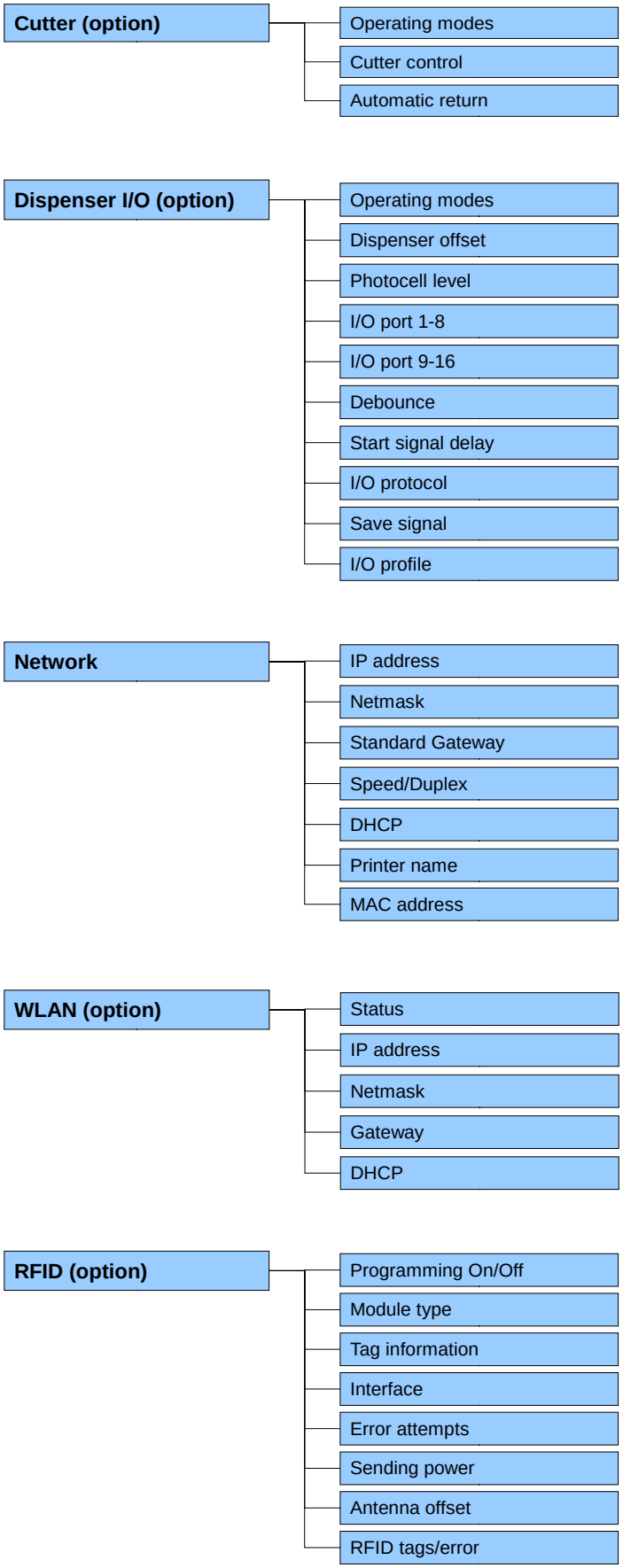
6.1 Operation Panel

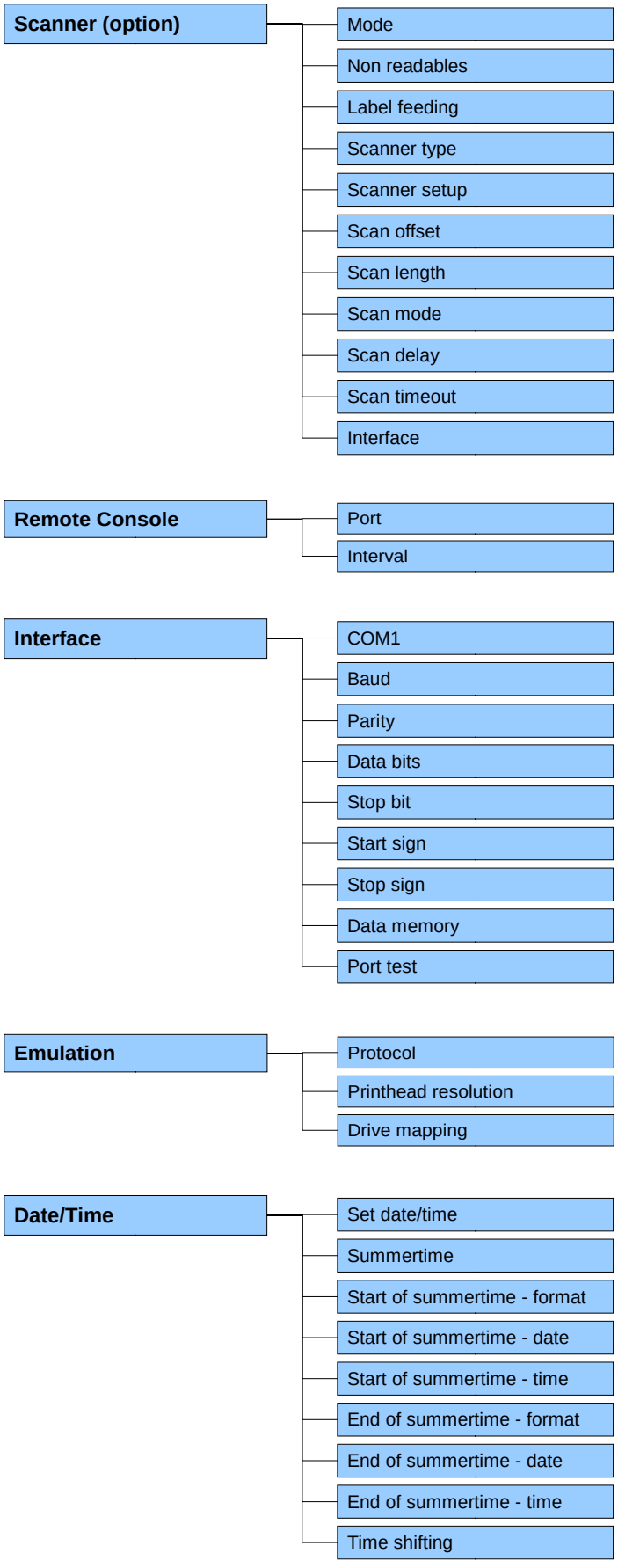


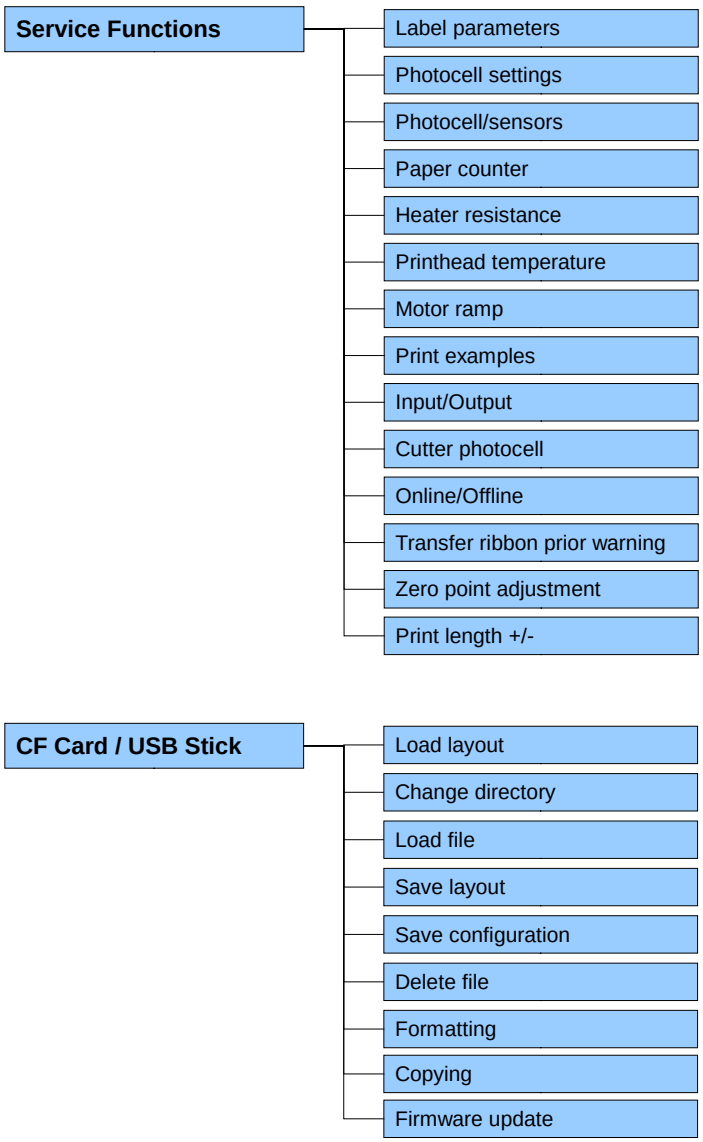
	The top line of the graphic display shows the printer type.
	The graphic display shows information about the current status of the printer and the print order, reports errors and shows the printer settings in the menus.
III	Back to the main menu. Start a test print. Delete a stopped print order.
F	Change to the function menu. In function menu: one menu item back.
	Change to the quantity (number of pieces) menu. Press keys ▲ and ▼ to select the number of labels that should be printed.
	Change to the menu of the CF card.
	In main menu: feed of one label. In function menu: skip to the next menu item.
	Confirm settings and modifications. Stop and continue current print orders. Delete a stopped print order with key III. No further label of the print order is printed.
◀	Return to the previous input field. Press keys ▲ and ▼ to change the values.
▶	Skip to the next input field. Press keys ▲ and ▼ to change the values.
▲	Increase figure at the cursor position.
▼	Decrease figure at the cursor position.

6.2 Menu Structure




Cutter (option)
Operating modes
Cutter control
Automatic return
Dispenser I/O (option)
Operating modes
Dispenser offset
Photocell level
I/O port 1-8
I/O port 9-16
Debounce
Start signal delay
I/O protocol
Save signal
I/O profile
Network
IP address
Netmask
Standard Gateway
Speed/Duplex
DHCP
Printer name
MAC address
WLAN (option)
Status
IP address
Netmask
Gateway
DHCP
RFID (option)
Programming On/Off
Module type
Tag information
Interface
Error attempts
Sending power
Antenna offset
RFID tags/error


Scanner (option)
Mode
Non readables
Label feeding
Scanner type
Scanner setup
Scan offset
Scan length
Scan mode
Scan delay
Scan timeout
Interface
Remote Console
Port
Interval
Interface
COM1
Baud
Parity
Data bits
Stop bit
Start sign
Stop sign
Data memory
Port test
Emulation
Protocol
Printhead resolution
Drive mapping
Date/Time
Set date/time
Summertime
Start of summertime - format
Start of summertime - date
Start of summertime - time
End of summertime - format
End of summertime - date
End of summertime - time
Time shifting


Service Functions
Label parameters
Photocell settings
Photocell/sensors
Paper counter
Heater resistance
Printhead temperature
Motor ramp
Print examples
Input/Output
Cutter photocell
Online/Offline
Transfer ribbon prior warning
Zero point adjustment
Print length +/-
CF Card / USB Stick
Load layout
Change directory
Load file
Save layout
Save configuration
Delete file
Formatting
Copying
Firmware update

6.3 Print Settings

Switch on the label printer and the display shows the main menu.

Press key F to access the function menu.

Press key ● to select the menu *Print settings*.

Speed

Indication of print speed in mm/s (see chapter Technical Data, page 15). The print speed can be determined for each print order anew. The setting of print speed affects also the test prints.

Contrast

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

Press key → to arrive the next menu item.

Ribbon control

Examination if the transfer ribbon roll is to end or if the ribbon was torn at the unwinding roll.
Off: The ribbon control is deselected, i.e. the printer continues without an error message.
On: The ribbon control is selected, i.e. the current print order is interrupted and an Error Message appears at the printer display.
Strong sensibility: The printer reacts immediately to the end of the transfer ribbon.
Weak sensibility: The printer reacts at approx. 1/3 more slowly to the end of the transfer ribbon.

Press key → to arrive the next menu item.

Y displacement

Indication of initial point displacement in mm.
Displacement of the complete print in paper direction. With positive values the print in paper direction starts later.
Value range: −30.0 to +90.0.

Press key → to arrive the next menu item.

X displacement

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

Press key → to arrive the next menu item.

Tear-off

Indication of value to which the last label of a print order is moved forward and is moved back to the beginning of label at a new print start. Labels can be torn off after terminating the print order without a label loss by tearing up.
Default value: 12 mm.
Value range: 0 to 50.0 mm.

6.4 Label Layout

Switch on the label printer and the display shows the main menu.

Press key F to access the function menu.

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

Press key ● to select the menu.

Label length

Indication of label length in mm
(see chapter Technical Data, page 15).

Gap length

Indication of distance between two labels in mm
(not for continuous labels).
Minimum value: 1 mm.

Press key → to arrive the next menu item.

Column printing

Indication of width of one label as well as how many labels are placed side by side (see chapter 11.1 Column Printing, page 93).

Press key → to arrive the next menu item.

Measure label

Press key ● to start measuring. The printer stops automatically after termination of measuring. The determined values are displayed and saved.

Press key → to arrive the next menu item.

Label type

Generally adhesive labels are set. Press key ↑ to select continuous labels. If the menu item *Label length/Gap length* contains a gap value, this value is added to the label length..

Press key → to arrive the next menu item.

Material selection

Selection of the used label and transfer ribbon material.

Press key → to arrive the next menu item.

Photocell

Selection of the used photocell.
The selection of one of the following photocell types is possible: transmission photocell normal and inverse, reflexion photocell normal and inverse
(see chapter 11.5 Photocells, page 100).

Scan position (AP)

Entry of percental label length by that the label end is searched. Marks onto the label can be skipped.

Press key → to arrive the next menu item.

Label error length

In case an error occurs, indication after how many mm a message appears in the display.
Value range:1 mm to 999 mm.

Synchronisation

On: If a label is missed on the liner an error message is displayed.
Off: Missing labels are ignored, i.e. it is printed into the gap.

Press key → to arrive the next menu item.

Flip label

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

Press key → to arrive the next menu item.

Rotate label

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

Press key → to arrive the next menu item.

Alignment

The adjustment of label is effected only after *Flip/Rotate label*, i.e. the adjustment is independent of the functions *Flip label* and *Rotate label*.
Left: The label is aligned at the left-most position of printhead.
Centre: The label is aligned at central point of printhead.
Right: The label is aligned at right-most position of printhead.

6.5 Device Settings

Switch on the label printer and the display shows the main menu.

Press key F to access the function menu.

Press key → as long as you arrive the *Device settings* menu.

Press key ● to select the menu.

Field handling

Off: The complete print memory is deleted.
Keep graphic: A graphic res. a TrueType font is transferred to the printer once and stored in the printer internal memory. For the following print order only the modified data is transferred to the printer. The advantage is the saving of transmitting time for the graphic data. The graphic data created by the printer itself (internal fonts, bar codes, ...) is generated only if they were changed. The generating time is saved.
Delete graphic: The graphics res. TrueType fonts stored in the printer-internal memory is deleted but the other fields are kept.

Press key → to arrive the next menu item.

Codepage

Indication of the font used in the printer. The following possibilities are available:

Codepage 1252 West European (former ANSI)
Codepage 437 English
Codepage 850 Western European
Codepage 852 Slavic
Codepage 857 Turkish
Codepage 1250 Central and East European
Codepage 1251 Cyrillic
Codepage 1253 Greek
Codepage 1254 Turkish
Codepage 1257 Baltic
WGL4
Please find the tables referring to the above mentionned character sets on www.valentin-carl.de/Downloads/Documentations.

Press key → to arrive the next menu item.

External parameters

On: Sending parameters such as print speed and contrast via our label creation software to the printer. Parameters which are set directly at the printer before are no longer considered.
Off: Only settings made directly at the printer are considered.

Press key → to arrive the next menu item.

Buzzer

On: An acoustic signal is audible when pressing a key.
Off: No signal is audible.

Display

Setting of display contrast.
Value range: 35 to 85.

Press key → to arrive the next menu item.

Printer language

Selection of language in which you want to display the text in the printer display.
At the moment the following languages are available: German, English, French, Spanish, Portuguese, Dutch, Italian, Danish, Finnish, Polish, Russian.

Press key → to arrive the next menu item.

Keyboard layout

Selection of region for the desired keyboard layout.
The following possibilities are available: Germany, England, France, Greece, Spain, Sweden, US, Russia.

Press key → to arrive the next menu item.

Customized entry

On: The question referring the customized variable appears once before the print start at the display.
Auto: The question referring the customized variable appears again after print end. Additionally a query appears demanding the number of copies that should be print.
Auto no quant: The question referring the customized variable appears again after print end. However, the same number of copies is printed. This number was defined once at the start of the print order.
Off: No question appears at the display. In this case the stored default value is printed.

Press key → to arrive the next menu item.

Hotstart

On: Continue an interrupted print order after switching on the printer anew.
Off: After switching off the printer the complete data is lost (see chapter 11.2 Hotstart, page 94).

Press key → to arrive the next menu item.

Autoload

On: A label which was loaded once from CF card can be loaded again automatically after a restart of printer.
Procedure: The used label is saved onto CF card. The label is loaded from CF card and printed. After switching the printer Off and again On, the label is loaded from CF card automatically and can be printed again. Press key  to start the print with input of number of labels.

NOTICE!

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

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

NOTICE!

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

Press key → to arrive the next menu item.

Manual reprint

Yes: I In case an error occurred and printer is in stopped mode then you can reprint the last printed labels by means of keys ▲ and ▼.
No: Only blank labels were advanced.

Press key → to arrive the next menu item.

Backfeed

The backfeed was optimised in the operating modes dispenser (optional), cutter (optional) and tear off. Now, when driving into the offset, the following label is 'pre-printed' if possible and therefore the backfeed of label is no necessary and time can be saved.

Delay

The adjustable deceleration time is only for mode 'backfeed automatic' of importance (see chapter 11.4 Backfeed/Delay, page 98).

Press key → to arrive the next menu item.

Password

By a password several functions can be blocked, so the user cannot work with them. There are several applications in which the use of password protection makes sense (see chapter 11.3 Password, page 96).

Press key → to arrive the next menu item.

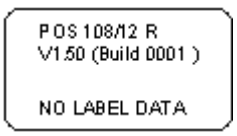
Label confirmation

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

Press key → to arrive the next menu item.

Standard label

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



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

Press key → to arrive the next menu item.

Synchronisation at print start

Off: In order to start the measurement procedure you have to change to the menu *Measure label*.
Measure: After switching on the printer, the loaded label is automatically measured.
Feed: After switching on the printer the label is synchronised to the beginning of label. For this one or multiple labels are advanced.

6.6 Network

Switch on the label printer and the display shows the main menu.

Press key F to access the function menu.

Press key → as long as you arrive the *Network* menu.

Press key ● to select the menu.

For more information, please see the separate manual.

6.7 Remote Console

Switch on the label printer and the display shows the main menu.

Press key F to access the function menu.

Press key → as long as you arrive the *Remote console* menu.

Press key ● to select the menu.

For more information please contact our sales department.

6.8 Interface

Switch on the label printer and the display shows the main menu.

Press key F to access the function menu.

Press key → as long as you arrive the *Interface* menu.

Press key ● to select the menu.

COM1 / Baud / P / D / S

COM1:
0 - serial interface Off.
1 - serial interface On.
2 - serial Interface On, no error message occurs in case of a transmission error.

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

P = Parity:
N - No parity
E - Even
O - Odd
Please observe that the settings correspond to those of the printer.

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

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

Press key → to arrive the next menu item.

Start sign / End sign

SOH: Start of data transfer block → Hex format 01
ETB: End of data transfer block → Hex formal 17
Two different start / en signs can be set. The settings are normally SOH = 01 HEX and ETB = 17 HEX. Several host computers cannot process these signs and therefore SOH = 5E HEX and ETB = 5F cannot be set.

Press key → to arrive the next menu item.

Data memory

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

Press key → to arrive the next menu item.

Port test

Check whether the data are transferred via the interface.
Press the ▲ and ▼ keys to select standard (on). Press the ● key and the data sent via any port (COM1, LPT, USB, TCP/IP) is printed.

6.9 Emulation

Switch on the label printer and the display shows the main menu.

Press key F to access the function menu.

Press key → as long as you arrive the *Emulation* menu.

Press key ● to select the menu.

Protocol

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

Press key ● to confirm the selection.

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

In menu Protocol, press key → to arrive the next menu item.

Printhead resolution

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

NOTICE!

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

Press key → to arrive the next menu item.

Drive mapping

The access to Zebra® drives
B: CF card
R: RAM Disk (standard drive, if not indicated)

is rerouted to the corresponding Valentin drives
A: CF
R: RAM Disk

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

NOTICE!

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

6.10 Date & Time

Switch on the label printer and the display shows the main menu.

Press key F to access the function menu.

Press key → as long as you arrive the *Date/Time* menu.

Press key ● to select the menu.

Setting of date and time

The upper line of display shows the current date, the second line the current time. Press keys ◄ to ► arrive the next input field. Press keys ▲ and ▼ to increase and/or decrease the figures at the cursor position.

Press key → to arrive the next menu item.

Summertime

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

Press key → to arrive the next menu item.

Start of summertime – Format

Select the format in which you want to define beginning summertime. The above example indicates the default setting (European format).

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

Press key → to arrive the next menu item.

Start of summertime – Date

By means of this function you can enter the date at which summertime has to start. This entry refers to the previously selected format. Example: summertime is automatically adjusted at last Sunday in March (03).

Press key → to arrive the next menu item.

Start of summertime – Time

By means of this function you can define the time when you want to start summertime.

Press key → to arrive the next menu item.

End of summertime – Format

Select the format in which you want to define end of summertime. The example above indicates the default setting (European format).

Press key → to arrive the next menu item.

End of summertime – Date

By means of this function you can define the date when you want to stop summertime. The entry refers to the previously selected format. Example: summertime is automatically adjusted at last Sunday in October (10).

Press key → to arrive the next menu item.

End of summertime – Time

By means of this function you can define the time when you want to stop summertime.

Press key → to arrive the next menu item.

Time shifting

By means of this function you can enter time shifting in hours and minutes (for automatically adjustment from summer and wintertime). This entry refers to the currently set printer time.

6.11 Service Functions

NOTICE!

So that the distributor res. the printer manufacturer in case of service can offer fast support, the printer is equipped with the menu *Service functions*.
Necessary information such as selected parameters can be taken directly from the printer. More details such as version of firmware or font are shown from the *Main menu.*

Switch on the label printer and the display shows the main menu.

Press key F to access the function menu.

Press key → as long as you arrive the *Service functions* menu.

Press key ● to select the menu.

Label parameters

Indication of label parameters in Volt.
A: Indication of minimum value.
B: Indication of difference between minimum and maximum value.
C: Indication of trigger level. The value is ascertained while measuring and can be changed.

Press key → to arrive the next menu item.

Photocell configuration

This function enables definition of photocell levels.
In case of problems while positioning or measuring of label, levels for label photocell can be set manually. Make sure that a large hub as possible (above the label >3 V, above the gap <1 V) is set.

Press key → to arrive the next menu item.

Photocell parameters

DLS: Indication of transmission photocell level in Volt.
RLS: Indication of reflexion photocell level in Volt.
SLS: Indication of peel off photocell level in Volt.
TR: Indication of transfer ribbon photocell status
(either 0 or 1).
H: Indication of printhead position.
0 = printhead down
1 = printhead up

Press key → to arrive the next menu item.

Paper counter

D: Indication of printhead attainment in meters.
G: Indication of printer attainment in meters.

Press key → to arrive the next menu item.

Heater resistance

To achieve a high print quality, the indicated Ohm value must be set after an exchange of printhead.

Press key → to arrive the next menu item.

Printhead temperature

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

Press key → to arrive the next menu item.

Motor Ramp

This function is often used for high printing speed as the tearing of transfer ribbon can be prevented.
The higher the '++' value is set, the slower the feeding motor is accelerated.
The smaller the '––' value is set, the faster the feeding motor is decelerated.

Press key → to arrive the next menu item.

Print examples

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

Press key → to arrive the next menu item.

Input

Indication of input signal level
0 = Low
1 = High

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

Press key → to arrive the next menu item.

Output

Indication of input signal level
0 = Low
1 = High

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

Press key → to arrive the next menu item.

Cutter photocell

1 – Printer is equipped with a cutter
2 – Printer is not equipped with a cutter

Cutter Home

1 – The cutter is in the initial position and ready for the cutting procedure.
0 – The cutter is not in the initial position. Before you are going to release a cutting procedure you first have to place the cutter in its initial position.

Press key → to arrive the next menu item.

Online / Offline

This function is activated e.g. if the transfer ribbon is to be changed. It is avoided that a print order is processed although the module is not ready. If the function is activated then press the key ● to change between Online and Offline mode. The respective state is indicated in the display.
Standard: Off

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

Press key → to arrive the next menu item.

Transfer ribbon advance warning

Before the end of transfer ribbon, a signal is send by the control output.

Warning diameter

Setting of transfer ribbon advance warning diameter.

In case you enter a value in mm then a signal appears via control output when reaching this diameter (measured at transfer ribbon roll).

Reduced speed (v)

Setting of the reduced print speed. This can be set in the limits of the normal print speed. Additionally there are the following settings:
–: No reduced print speed
0: Printer stops at reaching the warning diameter and indicates 'ribbon error'.

Press key → to arrive the next menu item.

Zero point adjustment

Indication of value in 1/100 mm.
After replacing the printhead - the print cannot be continued at the same position on the label, the difference can be corrected.

NOTICE!

The value for zero point adjustment is set ex works. After replacing the printhead, only service personnel are allowed to set this value anew.

Press key  to arrive the next menu item.

Print length +/−

Indication of print layout correction in percent.
By mechanical influences (e.g. label roll size) the print layout can be printed increased and reduced to its original size.
Value range: +10.0% to −10.0%

6.12 Main Menu

Switch on the label printer and the display shows the main menu. The main menu shows information such as printer type, current date and time, version number of firmware and the used FPGA.

The selected display is shown for a short time, then the indication returns to the first information.

Press key  to arrive the next information display.

7 Options

7.1 Cutter

CAUTION!

Risk of injury, particularly during maintenance, the cutter blades are sharp!

⇒ Switch off the before attaching the cutter!

⇒ The cutter may only be used when it is mounted on the printer!

⇒ Do not try to cut any materials which exceed the maximum width or thickness specifications.

⇒ Do NOT touch the area of the moving blades!

Switch on the label printer and the display shows the main menu.

Press key F to access the function menu.

Press key as long as you arrive the *Cutter* menu.

Press key to select the menu.

NOTICE!

The menu item cutter is only displayed if the printer recognizes the option via cutter photocell when switching on the printer.

In the upper line of display, the cutter mode can be selected.

In the line below, the cutter offset (approx. 20 mm) can be set.

Press key to change to the next operating mode.

Operating modes

Off:
The print order is processed without cutting.

Without backfeed:
A cut is effected after each label.
We recommend using this operating mode if no data which is to print is in the upper part of the label.

With backfeed:
A cut is effected after each label.

Interval with final cut:
A cut is effected after a fixed number of labels which you have to enter at the print start and additionally at the end of the print order.

Interval without final cut:
A cut is effected after a fixed number of labels which you have to enter at the print start. At the end of the printer order no cut is effected except when the set interval comes to the end of the print order.

Final cut:
A cut is only effected at the end of the print order.

Select the desired cutter operating mode, then press key → to select additional functions.

Cutter control

Automatic: After each printed label a cut is released.
Extern: A cut is released by an external I/O. External can only be selected if the label printer is equipped with option external I/O Nach jedem gedruckten Etikett wird ein Schnitt ausgelöst.

Press key → to arrive the next menu item.

Automatic return

On: The label is pulled back immediately after the cut.
Off: The label is pulled back only before the next print.

Single cut

In case you are in the main menu or a print order has been stopped you can release a single cut by pressing key ▶.

The type of the single cut depends on the set cutter mode, offset and the value set for the double cut.

7.2 Dispenser I/O

NOTICE!

In order to operate the printer in dispensing mode a print order has to be started and the printer has to be in 'waiting' mode.

Switch on the label printer and the display shows the main menu.

Press key F to access the function menu.

Press key → as long as you arrive the *Dispenser I/O* menu.

Press key ● to select the menu.

Dispenser offset

In the upper line of display, the operating mode can be selected.

In the line below, the dispenser I/O offset (approx. 20 mm) can be set.

Press key ▲ to change to the next operating mode.

Operating modes

Off:
It is printed without the labels are dispensed.

I/O static:
The input signal evaluated, i.e. it is printed as long as the signal exists. The number of labels which was entered at the print start is printed.
The set dispenser offset is not taken into consideration.

I/O static continuous:
For description of this operating mode, see I/O static.
Continuous means that it is printed as long as new data is transferred via interface
The set dispenser offset is not taken into consideration.

I/O dynamic:
The external signal is evaluated dynamically, i.e. is the printer in 'waiting' mode a single label is printed at each signal changing. After the print the set dispenser offset is executed, i.e. a backfeed is effected.

I/O dynamic continuous:
For description of this operating mode, see I/O dynamic.
Continuous means that it is printed as long as new data is transferred via interface.

Photocell:
The printer is controlled via photocell. The printer prints automatically a label if the user takes away the label at the dispensing ledge. The print order is finished when the target number of labels is reached.

Photocell continuous:
For description of this operating mode, see Photcell.
Continuous means that it is printed as long as new data is transferred via interface.

Additional parameters for Dispenser I/O

After selection of desired Dispenser I/O operating mode, press key ⏎ to select additional parameters.

Dispenser photocell

First value	=	Indication of the current sensor level. This indication is for checking purposes and cannot be modified.
Second value	=	Indication if a label (value = 1) or if no label (value = 0) was found. This indication is for checking purposes if the set switch level leads to a correct label recognition.
Third value	=	Indication of switch level (Default: 1.2).
Fourth value	=	Transmission power of label sensor [1..255] Depending on label material (color) the sensor level can be adapted in order to permit a safe label recognition (Default: 80).

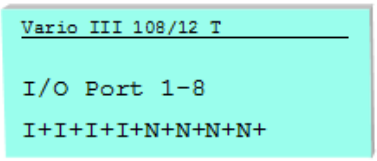
NOTICE!

The modification of this value is only taken into consideration for the operating modes *Photocell* and *Photocell continuous*.

Press key ⏎ to arrive the next parameter.

I/O Port 1-8 and I/O Port 9-16

Definition of port functions:
2 sign show the current setting for each port.



Port 1 2 3 4 5 6 7 8

(because of space reasons, the port number cannot be indicated)

The first sign specifies the following:

I = Port operates as Input
O = Port operates as Output
N = Port has no function (not defined)

These settings cannot be modified.

The second sign specifies the following:

+ = Active signal level is 'high' (1)
− = Active signal level is 'low' (0)
x = Port is deactivated
& = Function is executed at each change of the signal level
s = Status can be enquired/influenced* by interface
The printer-internal function is deactivated.

The modification of the signal level is only taken into consideration for the operating modes I/O static, I/O dynamic, I/O static continuous and I/O dynamic continuous.

* in connection with Netstar PLUS

Press key → to arrive the next parameter.

Debounce

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

Press key → to arrive the next parameter.

Start signal delay

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

Press key → to arrive the next parameter.

I/O protocol

Indication of interface at which the modifications of input signals (I/O) are sent.

Press key → to arrive the next parameter.

Save signal

On: The start signal for the next label can already be released during printing the current label. The signal is registered from the printer. The printer starts printing the next label immediately after finishing the current one. Therefore time can be saved and performance be increased.
Off: The start signal for the next label can only be released if the current label is printed to the end and the printer is again in 'waiting' state (output 'ready' set). If the start signal was released already before, so this is ignored.

Press key → to arrive the next parameter.

I/O Profile

Selection of the available configurations *Std_Label* (factory setting) or *StdFileSetLabel*.

List of registered functions for Std_Label

1	Print start and cut (Input)
2	No function
3	Counter reset (Input)
4	No function
5	No function
6	No function
7	No function
8	No function
9	Error (Output)
10	Print order active (Output)
11	Dispenser photocell: Label exists at dispenser photocell (Output)
12	Printing (Output)
13	Ready (Output)
14	Option RFID only: RFID error (Output)
15	Option scanner only: Bar code not readable (Output)
16	Transfer ribbon prior warning (Output)

List of registered functions for StdFileSetLabel

1	Print start and cut (Input)
2	Error confirmation (Input)
3	Number of the file to load Bit 0 (Input)
4	Number of the file to load Bit 1 (Input)
5	Number of the file to load 2 (Input)
6	Number of the file to load 3 (Input)
7	Number of the file to load 4 (Input)
8	Number of the file to load 5 (Input)
9	Error (Output)
10	Print order active (Output)
11	Dispenser photocell: Label exists at dispenser photocell (Output)
12	Printing (Output)
13	Ready (Output)
14	Option RFID only: RFID error (Output)
15	Option scanner only: Bar code not readable (Output)
16	Transfer ribbon prior warning (Output)

7.3 WLAN

Switch on the label printer and the display shows the main menu.

Press key F to access the function menu.

Press key → as long as you arrive the *WLAN* menu.

Press key ● to select the menu.

The menu item WLAN can only be selected if a WLAN card was recognized at switching on the printer.

For more information, please see the separate manual.

7.4 RFID

Switch on the label printer and the display shows the main menu.

Press key F to access the function menu.

Press key → as long as you arrive the *RFID* menu.

Press key ● to select the menu.

Press key ▲ and ▼ to set the operating mode of RFID hardware.

In order to program a RFID tag the setting must be On.

Press key ● in On mode to activate the hardware. The setting remains also when switching the print module Off.

After a successful activation the availability of RFID module is indicated. The menu is not available if no RFID hardware was recognised.

Press key ● to access the RFID menu.

Indication of RFID module type, frequency range (HF, UHF) and used frequency.

Press key → to arrive the next menu item.

The menu item Tag information contains several sub-functions.

Press key ● to indicate the tag number.

Indication of tag identification number (TID) or 'no RFID tag' if no tag was recognised.

For UHF Class 1 Gen2 tags the EPC is indicated.

Press key ● to return to the menu item Tag information.

Press key ▶ to arrive at the next sub-function and then press key ● to select the function.

Indication of tag storage allocation.

This information can be used to assure that the tag was programmed correctly.

Press key ● to return to the menu item Tag information.

Press key ▶ to arrive at the next sub-function and then press key ● to select the function.

Indication of tag type.

Press keys and to use the scroll function in order to shift the complete information into the display.

Press key to return to the menu item Tag information.

Press key to arrive at the next sub-function and then press key to select the function.

Start measuring function.

In order to evaluate the quality factor of RFID radio link the measuring function is started. With set tag offset the label is positioned accordingly.

Press key to return to the menu item Tag information.

Press key to arrive at the next sub-function and then press key to select the function.

Adjust antenna.
First value: Indication of successful reading attempts for current tag.

Second value: Number of reading attempts.

Third value: Number of failed reading attempts.

Press keys and to position the label in mm steps. The set antenna offset is corrected correspondingly.

Press key to return to the menu item Tag information.

Press key to arrive at the next sub-function and then press key to select the function.

The automatic tag recognition is started.

The print module tries to recognise the inserted tag.

The status of tag recognition is indicated in percent.

After the tag recognition is finished the customized information is to be confirmed with key to return to the previous menu.

Press key to arrive at the next menu item.

Indication of interface settings.

NOTICE!

The settings should not be changed because the ideal setting is effected automatically.

Press key → to arrive at the next menu item.

Settings for error handling.

Press key ▲ and ▼ to change between the different error reactions.

Print stop:
The print module stops after each RFID error (tag could not be programmed).

Marking:
In case of an error the label is marked with sample.

Ignore:
Errors caused by unsuccessful tag programming are 'ignored'. The label is printed. However, the error is logged in the RFID statistics.

Press key ◀ and ▶ to change between the settings error or number of attempts.

Press key ▲ and ▼ to specify the number of attempts, how often the RFID unit tries to write on the tag before an error is released or before the print order is cancelled.

Press key → to arrive at the next menu item.

Setting the sending power of the RFID write/read unit.

Press key ▲ and ▼ to change the value.

NOTICE!

The adjustment of this value requires more special knowledge of the used hardware. The indicated value does not have to be changed normally because it affects the function of the write/read module. Changing can lead to the fact that RFID tags cannot be programmed any longer.

Press key 💾 to save the current settings permanently.

Press key → to arrive at the next menu item.

Indication of the antenna position inside the used label.

Press key → to arrive at the next menu item.

Statistics indication of the previously programmed tags as well as the number of faulty tags.

Press key 💾 to reset the counter.

For more information, please see the separate manual.

7.5 Scanner

Switch on the label printer and the display shows the main menu.

Press key F to access the function menu.

Press key → as long as you arrive the *RFID* menu.

Press key ● to select the menu.

Mode

0 Off

1 Mode 1 (data comparison)
i.e. bar code date which was read by the scanner is compared with the printed data.

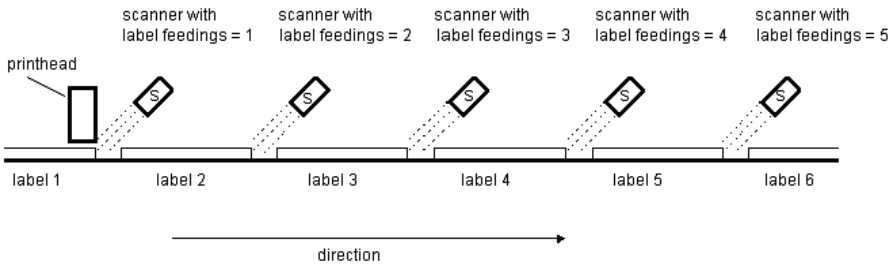
2 Mode 2 (check readability)
i.e. it is only checked if the scanner can read the printed bar codes.

NoRd = Non readables

Indication of number of successive non readables, i.e. when the printer indicates an error message.
Value range: 0 - 9
1 = the printer stops at the first label which cannot be red from the scanner and shows an error message.
0 = the printer do not stop at non-readable. A message appears at the display only.

VEtik = Label feeding

In many cases it is impossible to position the scanner directly at the printhead, and therefore with this setting a feeding can be set
Value range: 1 - 5
The illustration below clarifies the meaning of this parameter.



Press key → to arrive at the next menu item.

Scanner type

Selection of the connected scanner type.
For more information about the different scanner models, please contact our sales department.

Press key → to arrive at the next menu item.

Scanner setup

Positioning of scanner. First of all, the scanner must be connected, the appropriate scanner must be selected in the scanner type menu, the interface must be activated in the interface parameter menu and the interface parameters must be set correctly.

Press key → to arrive at the next menu item.

Scan offset

Indication of value at which the label is moved so the scanner can read data onto the label.

Press key → to arrive at the next menu item.

Scan length

If this parameter is set to 0 (AUTO), the switch on and off position of scanner is calculated by means of position and height of bar code onto the label.
If the parameter Scan Length is not 0, so this defines the length of scan sector. The start of scan sector is then set by the parameter Scan Offset. The following drawing shows the meaning of parameter.

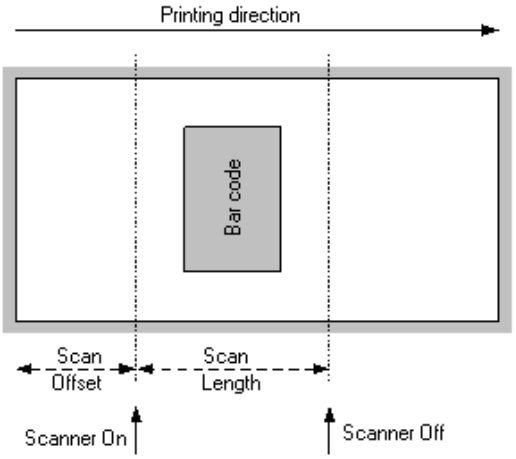


Figure 12

Press key → to arrive at the next menu item.

Scan mode

With this parameter can be adjusted, at which time the scanning of the bar code is to be effected - during printing or after printing.

Press key → to arrive at the next menu item.

Scan delay

In scan mode 'after print' the scanner is switched On after the label was printed. With this value the time can be specified between printing the label and switching On the scanner.

Press key → to arrive at the next menu item.

Scan timeout

In scan mode 'after print' can be specified with this value the time which is available for scanning the label.

Press key → to arrive at the next menu item.

Interface

To use a scanner, the COM2 interface is set to 1.

For more information, please see the separate manual.

8 Compact Flash Card / USB Memory Stick

8.1 General Information

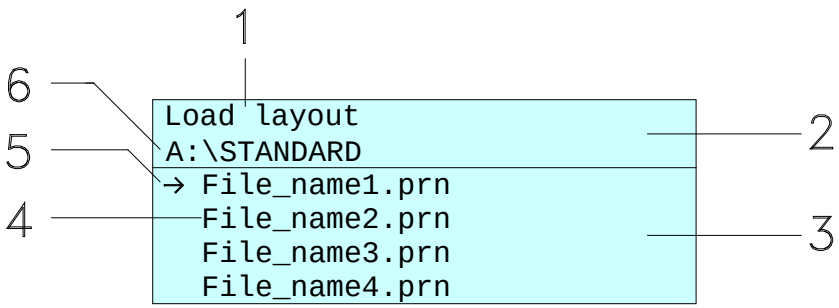
On the back side of the label printer is the slot for the CF card and the USB port for inserting the USB memory stick.

The mass storage menu (memory menu) permits the access to CF cards or USB memory sticks attached to the printer. Among loading and saving labels simple operations of contents are possible such as delete files/directories, copy files/directories or formatting.

NOTICE!

In case of a malfunction of the original memory medium it is recommend to copy the most important data by means of a commercial Card Reader.

8.2 Display Structure



1 = Current function

2 = 2-lined header

3 = Scroll range

4 = File names / directory names

5 = Marking of the selected file (cursor)

6 = Current path (drive:\directory)

The two-line header (2) contains the current function name (1) and the current path (6).

The four-line scroll range indicates a list of files/directories. The first entry (marked with an arrow) is the active one. To this file/directory and/or these files/directories refer all actions.

NOTICE!

Three drives are available.
A:\ indicates the CF card.
U:\ indicates the USB memory stick.
(only one stick can be inserted)
R:\ indicates the RAM (ZPL Emulation).

8.3 Navigation

The memory menu is operated with the keys of the foil keyboard of the control unit or with different function keys of an attached USB keyboard.

III	Esc	Return to the previous menu.
F	F2	Function *Load layout*: Change to the File Explorer. File Explorer: Change to the 'context menu'.
	F7	Select a file/directory if a multiple selection is possible.
	F6	Main menu: Access to the memory menu. File Explorer: Create a new file.
	↵	Start the current function for the active file/directory.
◄	←	Change to the superordinate directory.
►	→	Change to the currently marked directory.
▲	↑	In the current directory scroll upwards.
▼	↓	In the current directory scroll downwards.

8.4 Firmware Update

Starting from firmware version 1.58 it is possible to make a firmware update also via the memory menu. Both the USB stick as well as the CF card can be used for this.

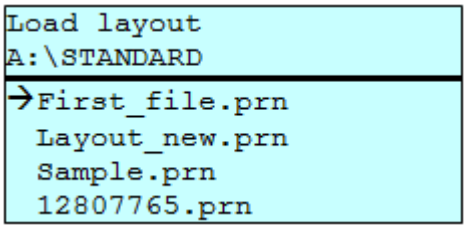
Procedure

On the CF card / USB memory stick a directory is created in which the necessary update files are stored (firmware.prn, data.prn). By means of the function *Load file* (see page 70) the file *firmware.prn* is selected/loaded. In the first step the printer executes the firmware update. After the necessary restart automatically the file *data.prn* is loaded. In this way the remaining components were updated. is After a renewed restart the update procedure is finished.

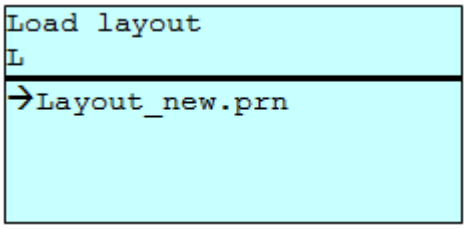
8.5 Filter

For certain functions a filter mask or a file name of a file which is to be saved can be entered. This input is indicated in the path line. It is possible with the filter mask to look for certain files. For example, with the input of 'L' only the files are listed whose character string starts with 'L' (regardless of upper and lower cases).

Without filter



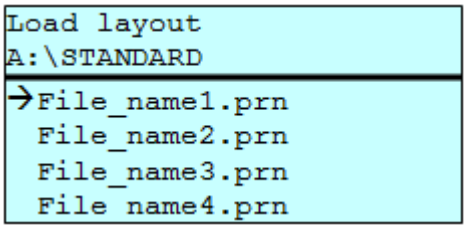
With filter



8.6 Functions

Load layout

Loads a layout in the standard directory. This function permits a fast operation as files which are not containing labels and directories are hidden.



Select a label in the standard directory and confirm the selection.

Select the number of copies which are to be printed.

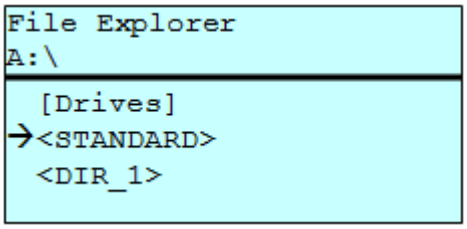
Press key  to start the print order.

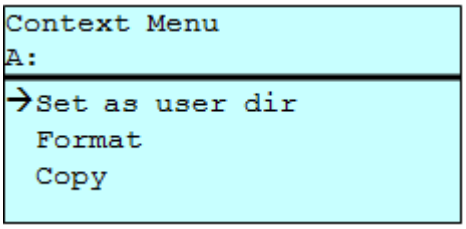
NOTICE!

The directory CANNOT be changed. A change of directory MUST be made in the File Explorer with the function *Change directory*.

Change directory

Specifies the standard directory in which the files are stored for further processing.





Press key to access to the memory menu.

Press key F to call the File Explorer.

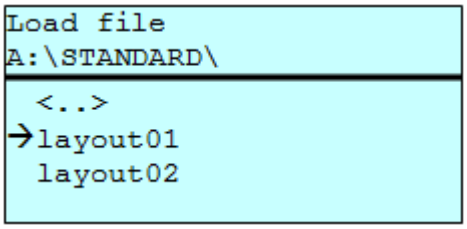
Press keys ▲, ▼, ◀, ▶ to select the directory.

Press key F to call the context menu.

Select the function *Set as user dir* and press key ● to confirm the selection.

Load file

Loads a file. This can be a configuration saved before, a layout, etc.



Press key to access to the memory menu.

Press key F to call the File Explorer.

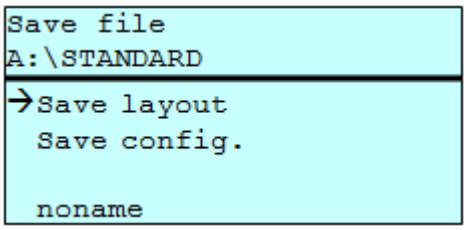
Press keys ▲ and ▼ to select the file.

Press key ● to load the selected file.

If the selected file is a layout, then the number of copies to print can be entered immediately.

Save layout

Saves the currently loaded layout under the selected name.



Press key to access to the memory menu.

Press key F to call the File Explorer.

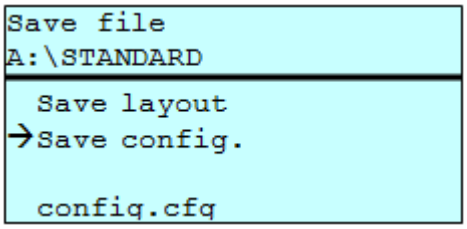
Press key to change to the menu *Save file*.

Selct the function *Savel layout* and confirm the selection with key .

If an USB keyboard is attached a new file name for *noname* can be assigned.

Save configuration

Saves the complete, current printer configuration under the selected name.



Press key to access to the memory menu.

Press key F to call the File Explorer.

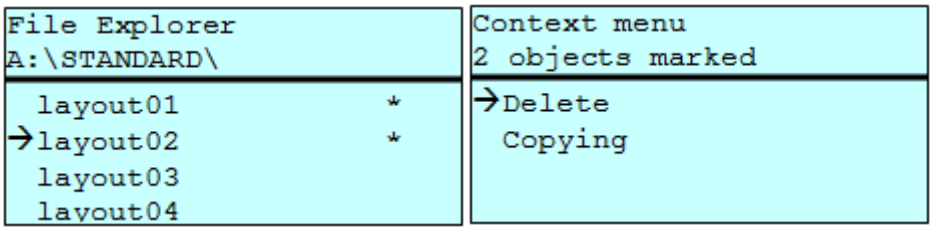
Press key to change to the menu *Save file*.

Selct the function *Save configuration* and confirm the selection with key .

If an USB keyboard is attached a new file name for *config.cfg* can be assigned.

Delete file

Deletes one or more files and/or directories irrevocably. With the deletion of a directory both the contained files and the subdirectories are deleted.



Press key to access to the memory menu.

Press key F to call the File Explorer.

Press keys ▲ and ▼ to select the file.

Press key to mark the files which are to be deleted. The marked entries are listed with *. Repeat this procedure until all desired files and/or directories are marked for deletion.

Press key F to call the context menu.

Select the function *Delete* and confirm the selection with key ●.

NOTICE!

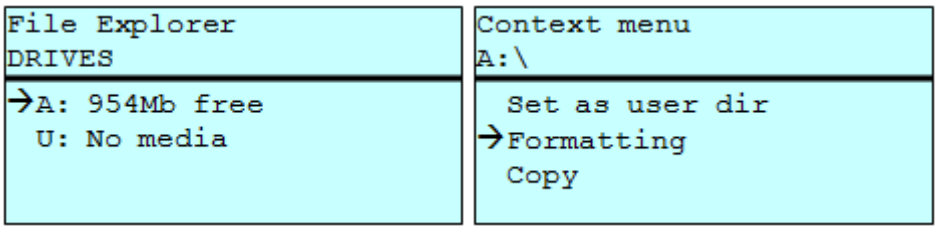
The deleting procedure is irreversible!

Formatting

Formats irrevocably the memory card.

NOTICE!

USB sticks cannot be formatted at the printer!



Press key to access to the memory menu.

Press key F to call the File Explorer.

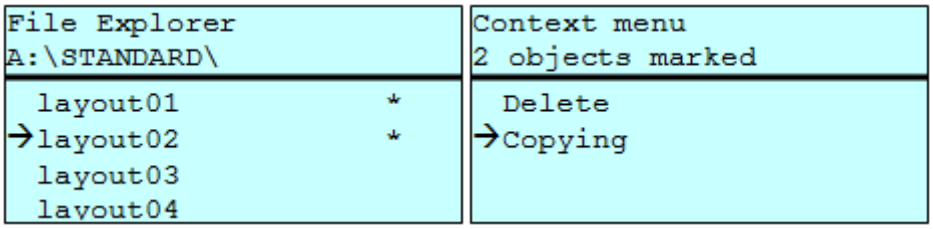
Select the drive which is to format with the navigation keys.

Press key F to call the context menu.

Select the function *Format* and confirm the selection with key ●.

Copying

Creates a duplicate of the original file and/or the original directory to make changes independently of the original.



Press key to access to the memory menu.

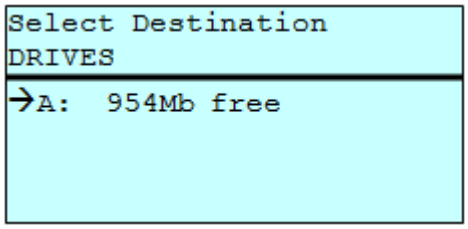
Press key F to call the File Explorer.

Press keys ▲ and ▼ to select the file.

Press key to mark the files which are to be copied. The marked entries are listed with *. Repeat this procedure until all desired files and/or directories are marked for copying.

Press key F to call the context menu.

Select the function *Copy* and confirm the selection with key ●.



Select the target storage with the navigation keys and press key ● to confirm the selection.

9 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 9.1, page 76).	As necessary.
Cleaning pressure roller (see chapter 9.2, page 76).	Each time the label roll is changed or when the printout and label transport are adversely affected.
Cleaning printhead (see chapter 9.3, page 77).	Each time the transfer ribbon is changed or when the printout is adversely affected.
Cleaning label photocell (see chapter 9.4, page 78).	When exchanging the label roll.
Replacing printhead (see chapter 9.5, page 79).	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.

9.1 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.

9.2 Cleaning the Pressure Roller

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

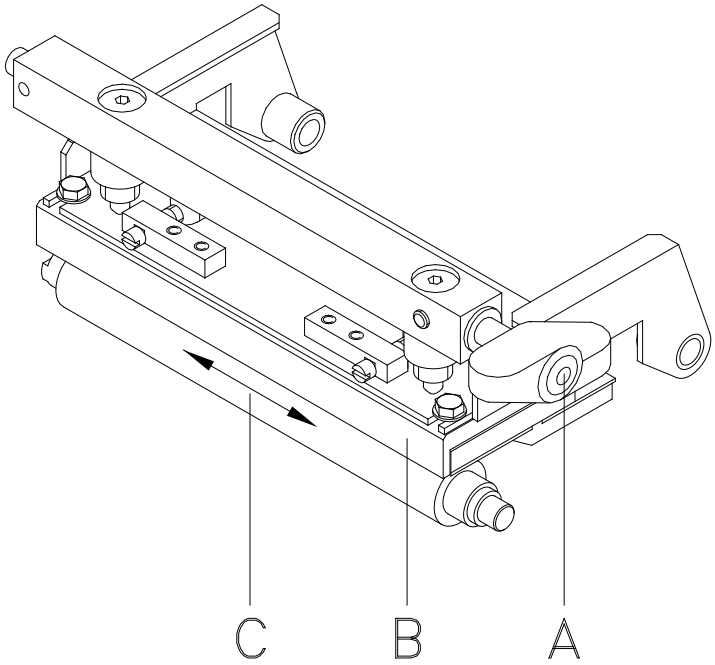


Figure 13

1. Open printer cover.
2. Turn lever (A) counter clockwise to lift up the printhead (B).
3. Remove labels and transfer ribbon form 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).

9.3 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.

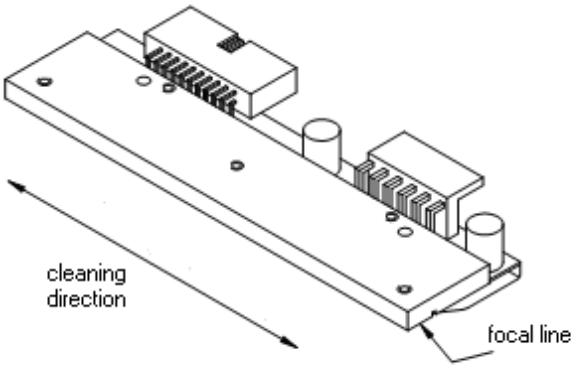


Figure 14

1. Open printer cover.
2. Turn lever (A, in Figure 13) 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.

9.4 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.

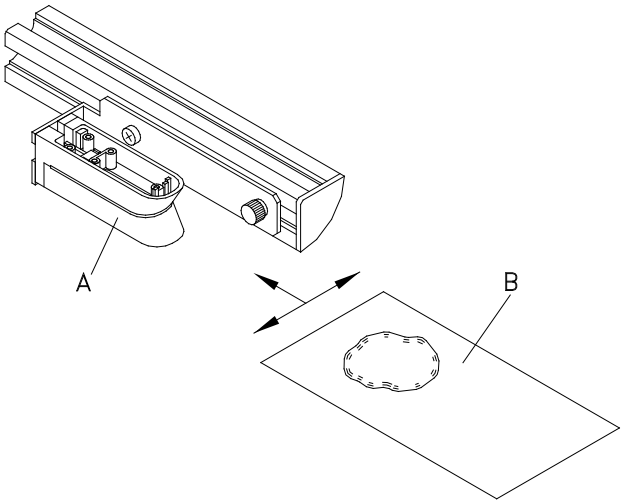


Figure 15

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, on page 29).

9.5 Replacing the Printhead (General)

NOTICE!

The printhead (4) is preinstalled on a head plate (1) and precisely aligned at the factory.

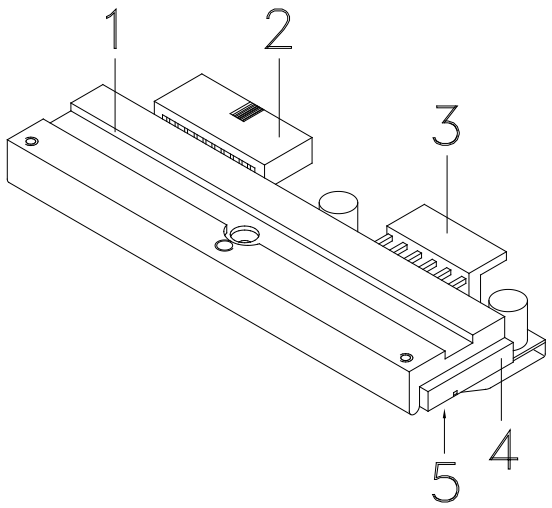


Figure 16

1 Head plate
2 Plug connection signal
3 Plug connection tension
4 Printhead
5 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 (2, 3).

⇒ Do not touch printing line (5) with hard objects or your hands.

9.6 Replacing the Printhead

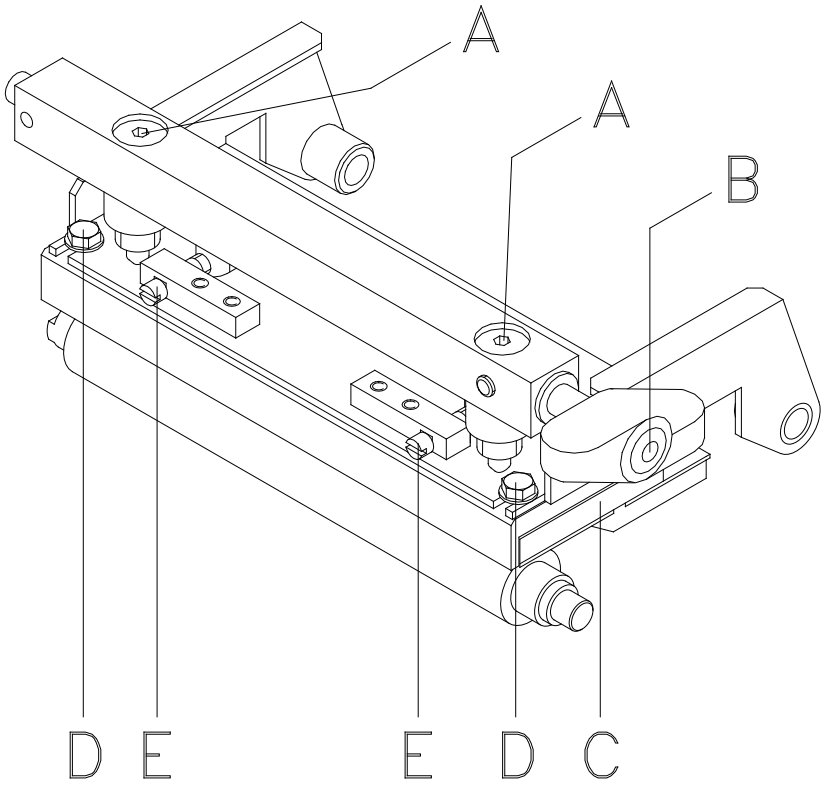


Figure 17

Removing the printhead

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

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 (D).
5. Check resistance value on the type plate of printhead and if necessary change the value in the *Service functions/heater resistance*.
6. Reload labels and transfer ribbon (see chapter 5 Loading Media, on page 29).

9.7 Adjusting the Printhead

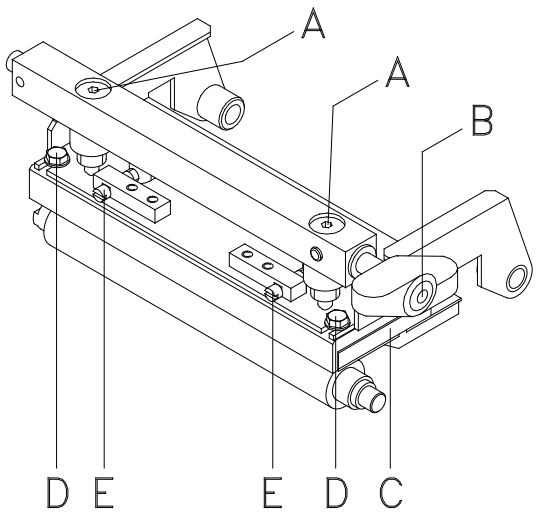


Figure 18

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 (D) with a hexagon key by approx. ¼ rotations.
2. Adjust the parallelism with the adjusting screws (E).
   Clockwise = printhead moves forwards
   Counter clockwise = printhead moves backwards
3. Adjust the parallelism as long as the printing result comes up to your full expectation.
4. Tighten again screws (D).
5. 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) to change the pressure of printhead.
2. Turning the pressure screws (A) in clockwise direction results in a pressure increase.
3. Turning the pressure screws (A) counter clockwise results in a pressure decrease.

10 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. Defect at the transfer ribbon photocell.	Change transfer ribbon. Check transfer ribbon photocell (service functions).
11 COM FRAMING	Stop bit error.	Check stop bits. Check baud rate. Check cable (printer and PC).
12 COM PARITY	Parity error.	Check parity. Check baud rate. Check cable (printer and PC).

Error message	Cause	Remedy
13 COM OVERRUN	Loss of data at serial interface (RS-232).	Check baud rate. Check cable (printer and PC).
14 Field numer	Received line number is invalid at RS-232 and Centronics.	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.

Error message	Cause	Remedy
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.
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 card 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.

Error message	Cause	Remedy
40 Length command	Invalid length of the received command statement.	Check data sent. Check connection PC - printer.
41 No drive	Compact Flash 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.
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.

Error message	Cause	Remedy
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.
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.

Error message	Cause	Remedy
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.
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.

Error message	Cause	Remedy
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.
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.

Error message	Cause	Remedy
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. Tad 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).
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).

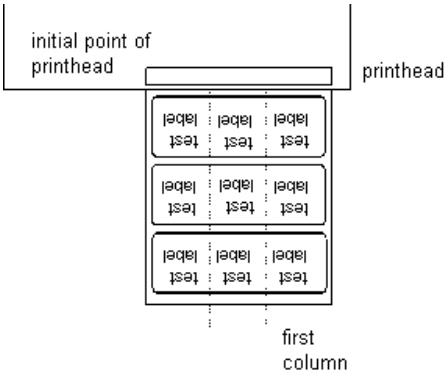
Error message	Cause	Remedy
113 Applicator error	Error while using applicator.	Check applicator.
114 Left position	Left final position switch is not in correct position.	Check LEFT final position switch for correct function and position. Check function of pneumatics for cross traverse.
115 Right position	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. Defect at the transfer ribbon photocell.	Change transfer ribbon. Check transfer ribbon photocell (service functions).
120 Wrong directory	Invalid target directory when copying.	Target directory must not be within the source directory. Check target directory.
121 No label found	No label found at the rear printhead (DuoPrint). Soiled label photocell. Labels not inserted correctly.	Insert new label roll. Check if labels are inserted correctly. Clean the label photocell.

11 Additional information

11.1 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.

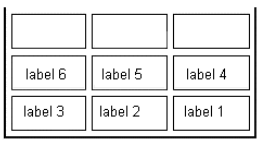
Press key → as long as to the menu item *Width/Columns*.

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.

11.2 Hotstart

NOTICE!

Because of the fact that no battery-buffered SRAM is available, the necessary data has to be saved in another way, i.e. 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.

11.3 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 acces 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 F 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.

11.4 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 of 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.

11.5 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.

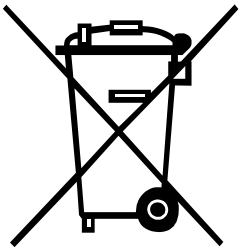
Reflexion photocell inverse

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).

12 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.

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