Operating manual - English

Thermal transfer printer
Micra series

79.18.005 • January 2007

PRINTER DRIVER INSTALLATION

Windows 95, Windows 98 and Windows Me

Start the computer and wait until the operating system is ready.

Click the **Start** button.

Place the cursor first on **Settings** and then on **Printers** (see illustration below).
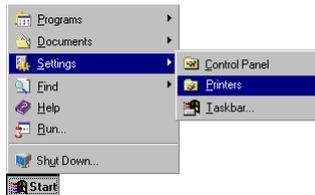
The following window appears:
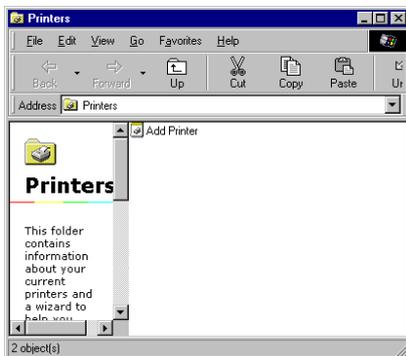
Double click **Add Printer** and the first dialog of the **Add Printer Wizard** appears.

Click the **Next** button and the next dialog of the wizard appears.

Select either **Local printer** or **Network printer** and confirm your selection with **Next**.
Insert your installation CD and then click the **Disk** button.
Click the **Browse** button and the **Open** dialog box appears.
Select from the **Drives** field the drive which you are using.

Double click **driver** and then select one of the available languages.
At the moment you can either chose **german** or **english**.
Depending on your operating system select **win95**, **win98** or **winme**.
The **Open** dialog box should appear as illustrated below.
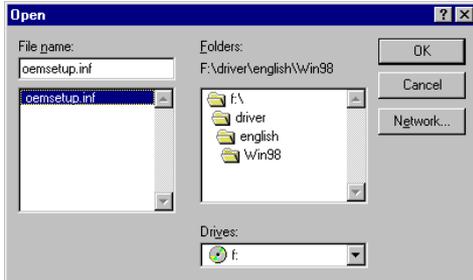
Confirm the selection with **OK** and the following window appears.

Click again the **OK** button and select the desired printer from the list.
Confirm the selection with **Next** and the next page of the wizard appears.
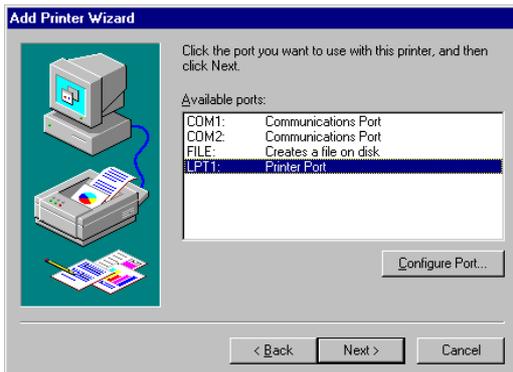
Select from the list of **Available ports** the one which you desire.
Confirm the selection with **Next** and the next page of the wizard appears.
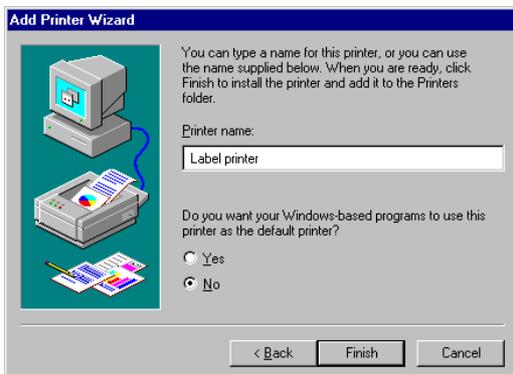
Click the **Printer name** field to enter an other name as the already existing.
Confirm with **Finish** and the data is copied from the installation CD into the corresponding directory.
After this procedure the printer is add to the list of **Available printers** and the installation process is finished.

Windows NT

Start your computer and wait until the operating system is ready.

Click the [Start] button.

Place the cursor first on **Settings** and then on **Printers** (see illustration below).
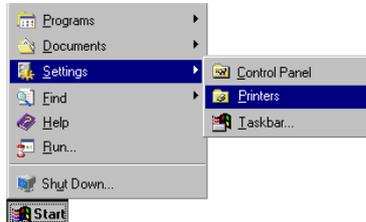
The following window appears:
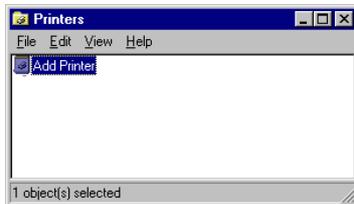
Double click **Add Printer** and the first dialog of the **Add Printer Wizard** appears.

Select if the printer you want to install is a local printer **(My Computer)** or a network printer **(Network printer service)**.

Confirm your selection with Next and the next page of the wizard appears

Select from the list of **Available ports** the one which you desire and confirm the selection with **Next**.

Insert the installation CD and click the **Disk** button.

Click the **Browse** button and the **Locate File** dialog box appears.

Select from the **Drives** field the drive which you are using.

Double click **driver** and then select one of the available languages.
At the moment you can either chose **german** or **english**.
Select WinNT and the Locate File dialog should appear as illustrated below

Double click the **oemsetup.inf** file and the following dialog appears.
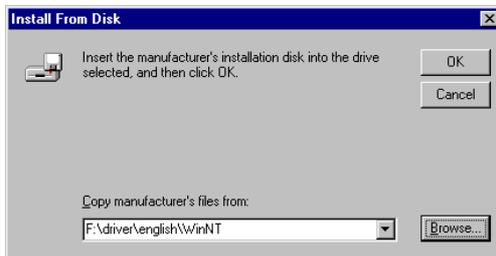
Click again the **OK** button and select the desired printer from the list.
Confirm the selection with **Next** and the next page of the wizard appears.
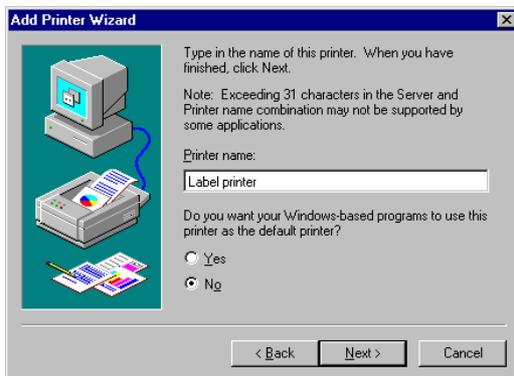

Click the **Printer name** field to enter an other name as the already existing.

Confirm with **Finish** and the data is copied from the installation CD into the corresponding directory.

After this procedure the printer is add to the list of **Available printers** and the installation process is finished.

Windows 2000 Professional

Start your computer and wait until the operating system is ready.

Click the ![Start] button.

Place the cursor first on **Settings** and then on **Printers** (see illustration below).
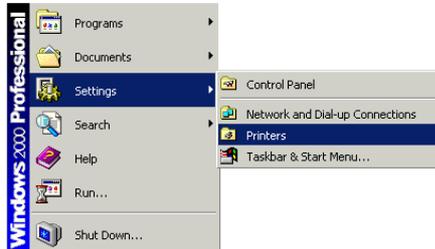
Following dialog box appears:

Double click the **Add Printer** icon and the **Add Printer Wizard** appears.
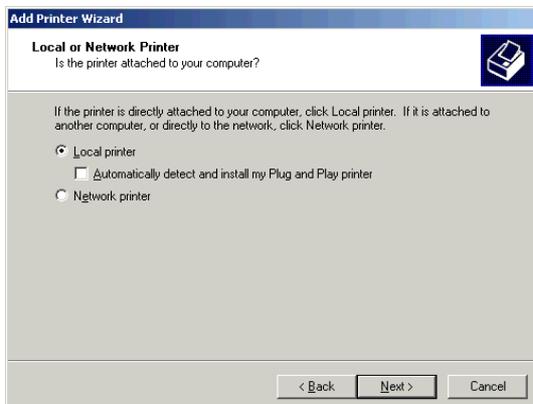
Select either **Local printer** if you want to install a local printer or select **Network printer** if you want to install the printer directly to the network.

Confirm your selection with **Next** and the next page of the **Add Printer Wizard** appears.

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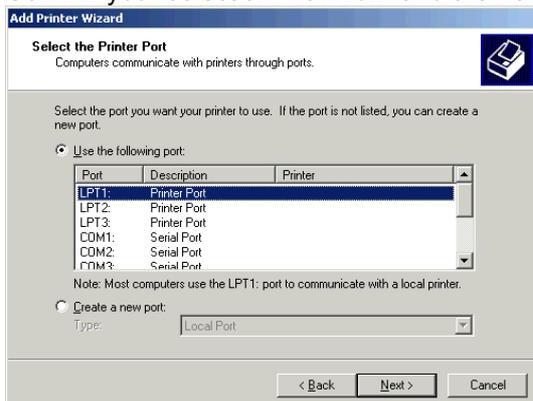
From the list of available ports, select the one you want the printer to use and confirm your selection with **Next**. The next page of the **Add Printer Wizard** appears.
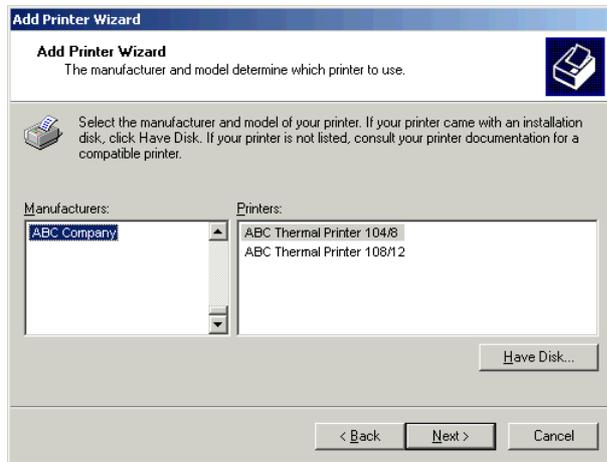
Insert the installation CD and then click the **Have Disk** button.
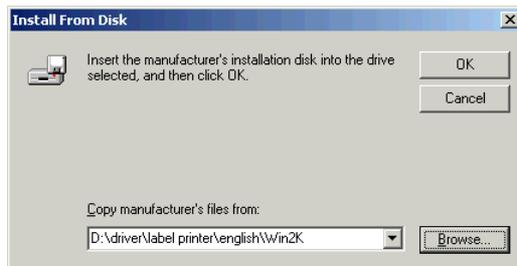
Click the **Browse** button and the **Locate File** dialog appears.

Double click the **Driver** folder and then select the desired printer.

After double clicking the desired printer you have the possibility to select one of the available languages.
At this time you have the possibility either to select **german** or **english**.
Double click the **Win2K** (Windows 2000) folder.
Double click the *.inf file and you return to the **Install From Disk** dialog (see above).

Click the **OK** button and a list of available printers appears. Select the desired printer type and confirm your selection with **Next**.

Click the **Printer name** field to enter another name as the already proposed one.

Follow the further instructions at the screen and data is copied from the installation CD into the corresponding directory.

After termination of this procedure the printer is add to the list of **Available printers** and the installation is finished.

INITIAL OPERATION

Attach the mains desk adapter to an easily accessible shockproof socket.

Connect DC connection linen of mains desk adapter with printer (female connector 21).

Turn on the DC-switch at the rear of the printer.

Load label material and also transfer ribbon (if required).

Press and hold feed key as long as status LED is orange and ready LED flashes red. Release feed key and the measuring procedure is started.

Note: In order to separate printer completely from power line, remove mains plug from shockproof socket.

INSTALLATION

Note: Before initial operation the operating conditions described at the end of this operating manual have to be granted.

Please check the printer status immediately after receipt, to be sure that nothing was damaged on the route of transportation.

After unpacking, please check the accessories (see end of page) that come with the package, and store them immediately.

Note: Keep the **original packaging** for possible later deliveries

Put the printer onto a suitable ground, avoiding exposure to bright sunlight.

Please avoid high humidity and dust environment and make sure that the printer is not used in dump or wet area.

Our printers are exclusive for printing on labels, continuous paper and similar materials.

Operate the printer only with the original cable with safety contact.

Note: When servicing or repairing, the DC switch has to be turned off and the cable disconnected from shockproof socket.

Connect the power line at the rear of the printer (see illustration below).

Connect the interface cable (RS-232) at the rear of the printer and lock it.

Make a connection to the computer at a free interface.

You can operate the printer via printer driver or via our label design software.

While creating connexions you have to switch off all devices (printer, PC, etc.) that you want to connect. If you want to remove connexions you have to switch off the devices, tool.

Caution: Not open mains desk adapter in order to avoid electrical shock!

Accessories

1. Label printer
2. Connecting cable (110V and 230V)
3. Switching power adapter
4. Parallel interface cable
5. Serial interface cable (optional)
6. USB cable
7. Label roll core
8. Transfer ribbon rewinder/unwinder

9. Empty roll core
10. Label roll sample
11. Transfer ribbon sample
12. Quick start guide
13. CD with manuals and printer driver

Parts of printer
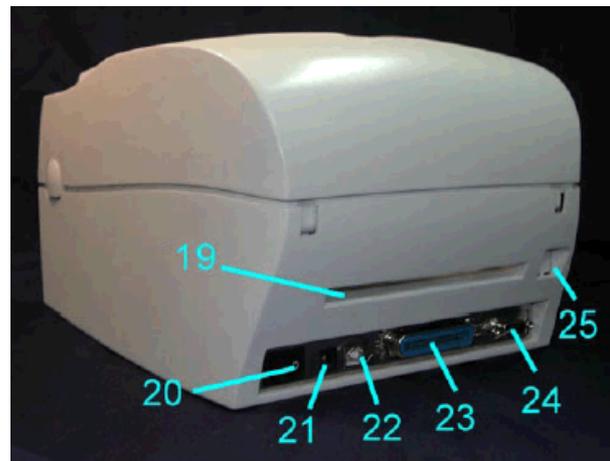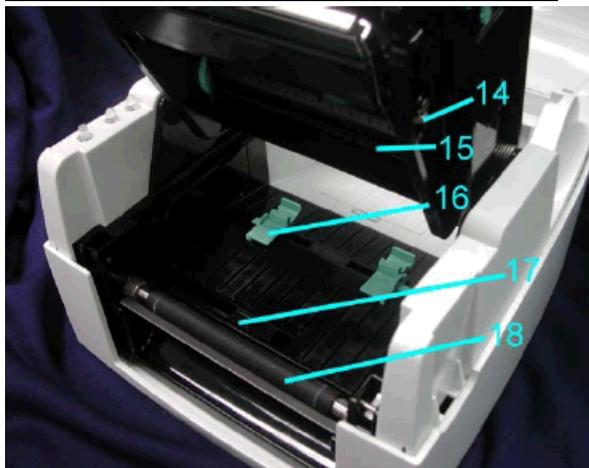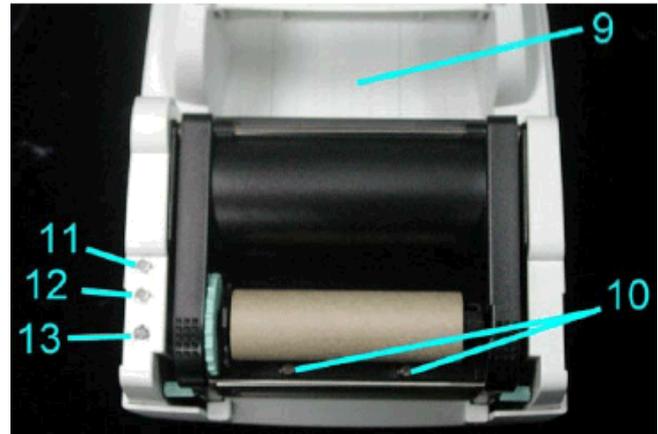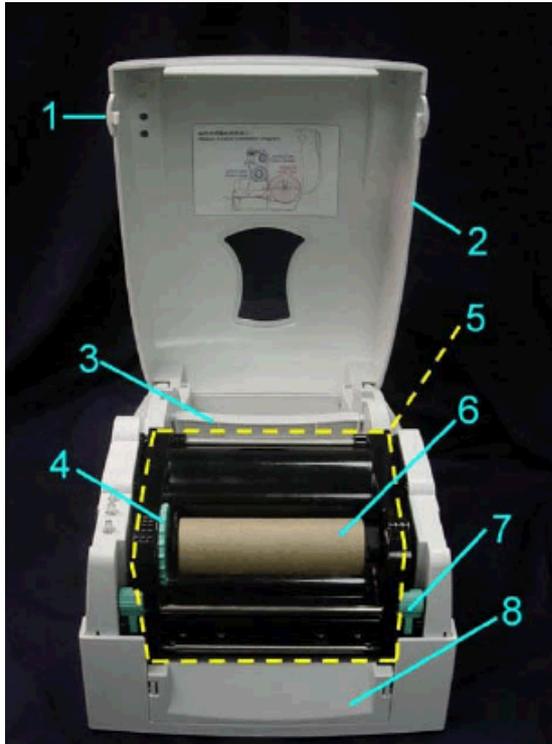
1	Cover open button	10	Printhead pressure adjusting screw (left/right)	19	Fan-fold label guiding
2	Top cover	11	Ready LED	20	Power switch
3	Label roll core	12	Status LED	21	Power socket
4	Ribbon rewind wheel	13	Feed key	22	USB interface
5	Print mechanism	14	Print line adjusting gear	23	Parallel interface
6	Ribbon rewind shaft + empty ribbon take up core	15	Ribbon supply shaft	24	Serial interface
7	Locking tenon (left/right)	16	Label guiding	25	Ethernet socket (optional)
8	Front cover	17	Label photocell		
9	CPU cover	18	Platen roller		

LOADING OF MATERIAL

Loading of labels in standard mode

Open the top cover by pressing the cover open button on both sides.

Place the label roll onto the label roll core.

Loosen and lift the upper print mechanism by pressing the locking tenons.

Note: Check the position of label photocell. Normally the photocell must be placed rightmost.

Feed the label through the two label guides to the tear-off bar.
Align the label guides to the label edge.
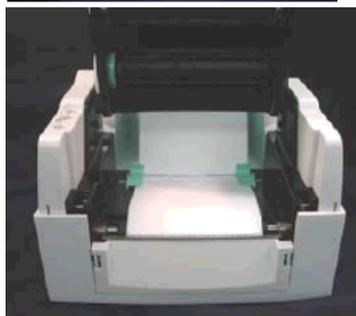
Close the upper print mechanism from the top to finish label installation.

Installation of label roll core

1" roll core installation
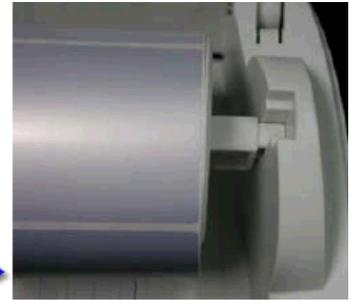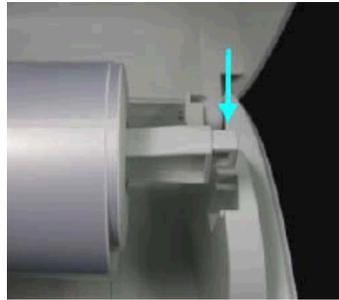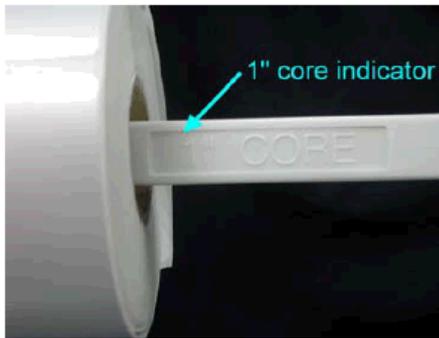
1,5" roll core installation
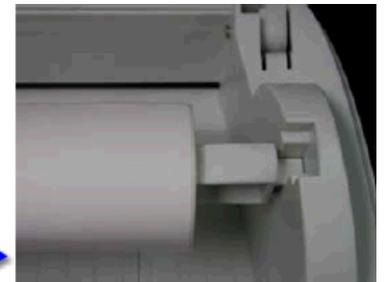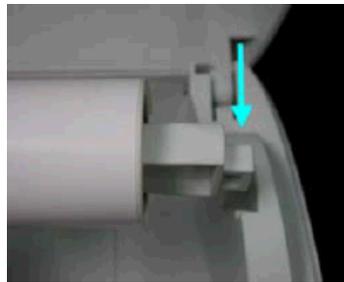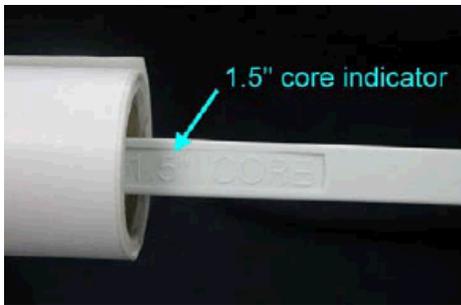
3" roll core installation
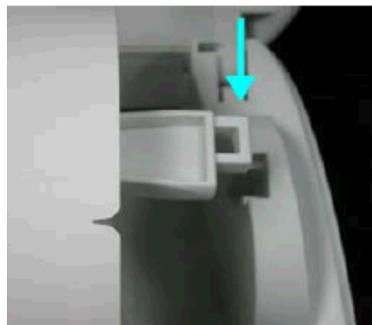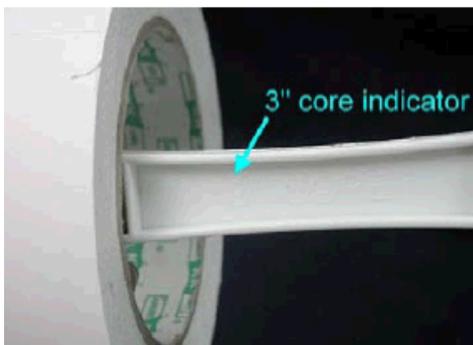
Loading of transfer ribbon

Note: 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.

Advice: 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.

Place the printer onto a smooth surface, and open the top cover.

Loosen and then lift the upper print mechanism by pressing the locking tenons.

Take out the ribbon supply shaft and rewind shaft.

Place the new ribbon roll onto the ribbon supply shaft.
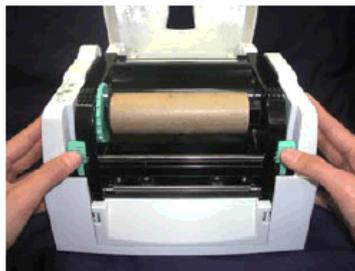
Feed the ribbon from the ribbon supply shaft under the printhead.

Wrap the ribbon around the ribbon shaft and stick the ribbon onto the empty ribbon roll core.
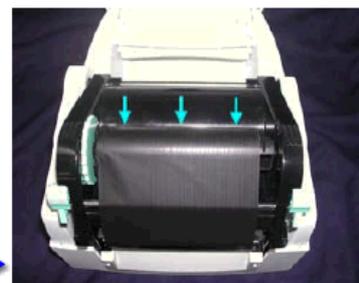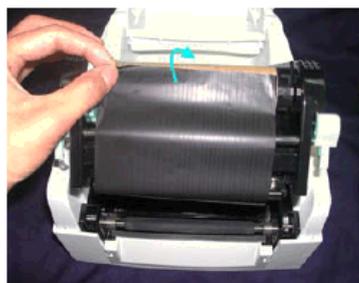
Firmly close the upper print mechanism.
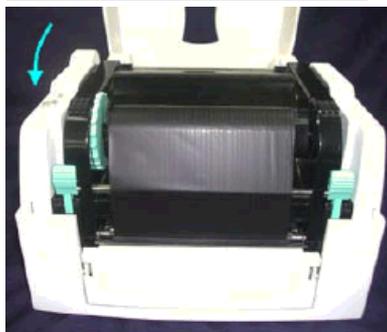
Note: Before loading a new transfer ribbon roll, we recommend to clean the printhead with printhead and roll cleaner (97.20.002).

TECHNICAL DATA

	Micra 104/8	Micra 106/12
Print		
min. label width	25 mm	25 mm
min. label height	12 mm	12 mm
print width	104 mm	106 mm
max. label width	118 mm	118 mm
max. print height	850 mm / 800 mm (Option Ethernet/LAN)	600 mm / 550 mm (Option Ethernet/LAN)
resolution	203 dpi	300 dpi
print speed	50 - 100 mm/s	50 - 100 mm/s
printhead	Flat Type	Flat Type
Printer build-in fonts		
pixel fonts	6	6
proportional fonts	6	6
Bar codes	EAN 8, EAN 13, EAN 128, EAN ADD ON, CODABAR, Code 39, Code 39 extended, Code 93, Code 128, PZN Code, Code 2/5 interleaved, Pharmacode, UPC A, UPC E, Leitcode, Identcode	
2D bar codes	CODABLOCK F, DataMatrix, MAXICODE, PDF417, QR Code	
Composite bar codes	GS1 DataBar Expanded, GS1 DataBar Limited, GS1 DataBar Omnidirectional, GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional, GS1 DataBar Truncated	
Interfaces		
Serial	RS-232C, 2400...57600 Baud	
Parallel	Centronics (SPP)	
USB	1.1	
Ethernet/LAN	internal 10/100 Base-T (optional)	
Labels		
core diameter	25,4 mm / 38,1 mm / 76,2 mm	
max. roll diameter	127 mm	
Transfer ribbon		
core diameter	25,4 mm / 1"	
max. length	ca. 300 m	
max roll diameter	68 mm	
colour	ooutside	
Dimensions (mm)		
width x height x depth	226 x 171 x 285	
Weight	approx. 3 kg	
Power connections		
nominal voltage	24 VDC	
nominal current	2 A	
Power connections mains desk adapter WSD060240		
nominal voltage	110-230 V / 50-60 Hz	
power consumption	max. 70 VA	
Operating conditions		
operating temperature	5 - 35 °C	
relative humidity	max. 80% (operation), max. 90% (storage) - non-condensing	

Technical modifications are subject to change without notice

Standard accessory:
- CD ROM with Windows printer drivers for all operating systems as well as with the most important manuals for printer and software.
- Control panel
  2 LED, two-coloured, 1 function key Feed

Options
- Cutter unit
- Label dispenser unit
- Ethernet 10/100 + RTC
- Label creation software Labelstar PLUS

FUNCTIONS AND SETTINGS

The Micra only provides one key for operation. The operating status is indicated by two two-coloured LED.
Please find the following assignment:

Control panel	Status	Key assignment
Ready / Status / Feed	Both LED lights show no light, i.e. the printer is switched off or has no power supply.	**press short**: no function **press long:** no function
Ready / Status / Feed	**Normal status** Printer is ready for operation.	**press short:** label feed **press long**: is a print order active, the print is stopped.
Ready / Status / Feed	**Error status** If status LED is red, printer indicates an error.	**press short:** change to **"print stopped"** mode. **press long:** printing the error code.
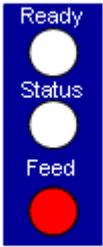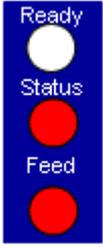
Note: In order to start a status print, press the Feed key at switched off printer and only after pressing key, switch printer on.
Wait to three sequential audio printer signals and then release the Feed key.

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In normal status of printer it is possible to carry out settings or to release functions.

If you press and at the same time hold the Feed key, then the status LED changes its colour every 2 seconds (selection of function).

Control panel	Procedure	Function
Ready (red), Status (flashing red), Feed (red)	Press and hold Feed key as long as Ready LED is red and Status LED flashes red. Release the Feed key.	**Test print** 3 successive printer blips
Ready (flashing red), Status (red), Feed (red)	Press and hold Feed key as long as Ready LED flashed red and Status LED is red. Release the Feed key.	**Status print** 1 printer blip By means of this function, a status print is released. This print contains existing print parameter e.g. print speed.
Ready (flashing red), Status (yellow), Feed (red)	Press and hold Feed key as long as Ready LED flashes red and Status LED is yellow. Release the Feed key.	**Measure label** 2 printer blips By means of this function the measuring procedure is started and approx. 3 labels are fed forward. It is recommended to start the measuring procedure after each change of label roll.
Ready (flashing red), Status (flashing green), Feed (red)	Press and hold Feed key as long as Ready LED flashes red and Status LED flashes green. Release the Feed key.	**Transfer ribbon control** 3 printer blips By means of this function the transfer ribbon control can be activated or not: It is checked if the ribbon roll is to end or if the ribbon was tore at the unwinding roll. It is possible to select one of the three functions. **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.

Control panel	Procedure	Function
	Press and hold Feed key as long as Ready LED flashed red. Release the Feed key.	**Reset to default** 4 printer blips By means of this function the printer can be reset to the default settings.
	Press and hold Feed key as long as Ready LED and Status LED flash red. Release the Feed key.	**Port test** 5 printer blips This function permits the verification of all available interfaces. Afterwards a print with the corresponding data is effected.
	Press and hold Feed key as long as Ready LED is red and Status LED flashes green. Release the Feed key.	**Single cut** 6 printer blips This function provides the possibility to release a single print.

OPTION DISPENSER

Installation of dispenser unit

⚠️ Remove mains plug from shockproof socket in order to separate printer completely from power line, otherwise there is a risk to life and limb from the live wires inside the open printer.

Open the top cover by pressing the cover open buttons on both sides.	
Push the front cover piece button inward to open. Lift/take off the front cover piece according to direction shown.	
Plug in the connector according to photo shown. (3 pin onto converting board). The label used in dispensing mode should be at least 30 mm in height	

Place the right side in first, and then fit the left side.	
Hold the dispenser unit and the screws.	
Peel off the first label, and feed the liner through the roller and the peel off bracket. Flip close the dispenser unit.	
Close the print mechanism and press the Feed key.	
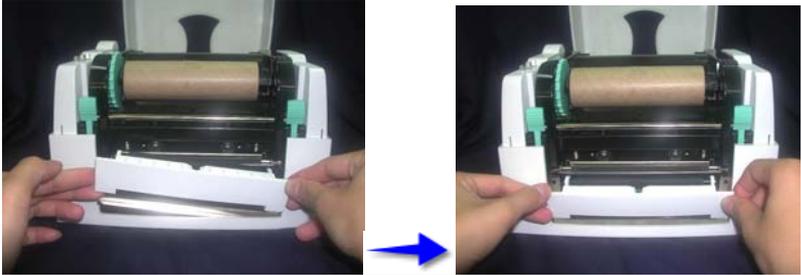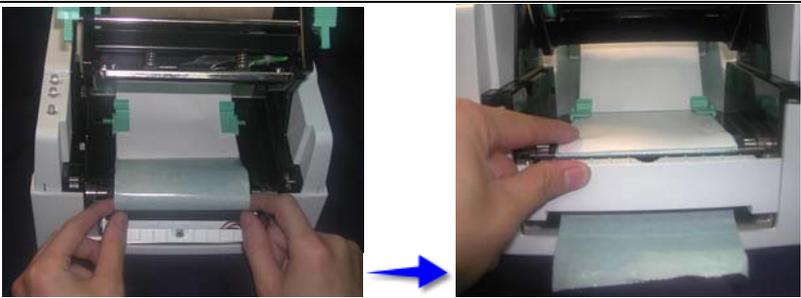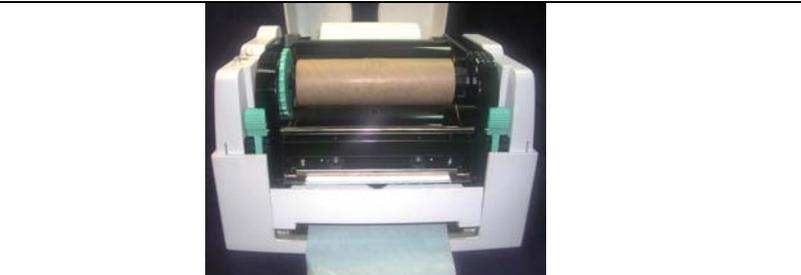
The recommended label material has a thickness of 0.06 mm ± 10% and the base weight is 65g/m^2 ± 6%.
Recommended max. label width in dispenser mode: 110mm

Dispenser modes

It is possible to select the desired operating mode either by corresponding printer driver or label design software.

The printer supports the following operating modes:

Off
It is printed without the labels are dispensed.

Photocell:
The printer is controlled via photocell. The printer prints automatically a label when the user tears off the label at the tear-off edge. The print order is finished at the nominal number of labels.

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

OPTION CUTTER

⚠️ There is danger by moving parts. Keep away fingers and other parts of body!

Installation of cutter unit

⚡ Remove mains plug from shockproof socket in order to separate printer completely from power line, otherwise there is a risk to life and limb from the live wires inside the open printer.

Open the top cover by pressing the cover open buttons on both sides.	
Push the front piece button inward to open. Lift/take off the front cover piece according to the direction shown.	
Open the mechanism by pressing the locking tenon, plug in the cable connector of the cutter module onto the switch board socket.	
Clip in the right side of the cutter module first and then secure the left side.	

Flip the cutter module down according to photo in order to open the cutter.	(A)
Hold the cutter module and lock it with the two side screws.	
After the screws are locked, flip close the cutter module.	
Firmly close the print mechanism.	
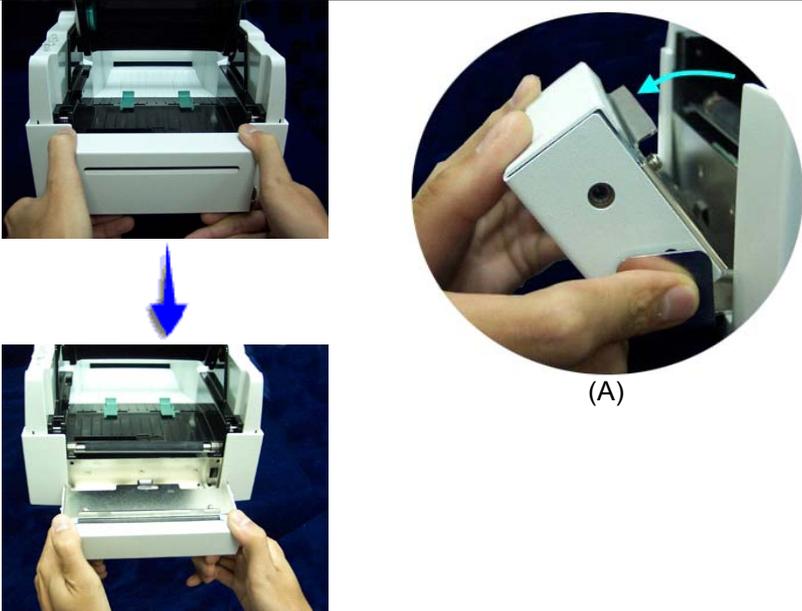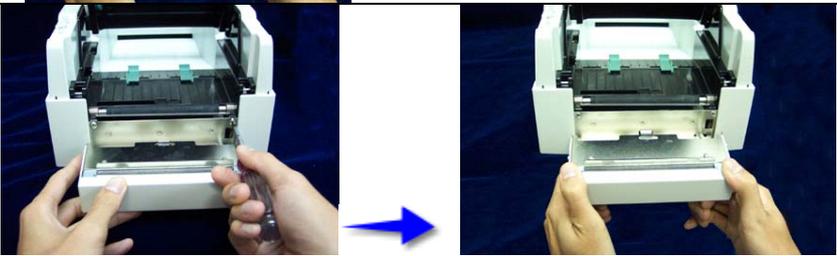
Do not cut self-adhesive continuous labels! The remainder of adhesive will pollute the rotary knife and impair safe operation! The service life of cutter is 500,000 cuts with 160g/m^2 paper weight and 250,000 cuts with 200g/m^2 paper weight.
Max. paper cutting width:116mm

Cutter operating modes

It is possible to select the desired operating mode either via the corresponding printer driver or the label design software.

The printer supports the following operating modes:

Off
It is printed without cutting the labels.

Without backfeed
A cut is effected after each printed label.
The selection of this operating mode is only useful if the upper part of the label does not contain printable data.

With backfeed
A cut is effected after each printed label.

Interval with final cut
A cut is effected after a fixed number of labels which you have already selected at 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 already selected at print start.
However, at the end of the print order no final cut is effected despite the set interval is at the end of the print order at the same time.

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

Single cut
Press and hold the Feed key as long as the ready LED is red and the status LED flashes green.
Release the Feed key and a single cut is effected.

ERROR CORRECTION

Note: If the status LED is red, then the printer indicates an error. Press longer than 3 seconds to the FEEd key and the error code (see table below) is printed.

Error no.	Possible causes	Possible error correction
1	Line rises up completely or partly over the upper edge of label.	Move line down (increase Y value). Check rotation and font.
2	Line rises up completely or partly over the bottom edge of label.	Move line up (decrease Y value) Check rotation and font
3	One res. several characters of the text is res. are not available in the selected font.	Change text. Change font.
4	Selected code is not available.	Check code type.
5	Selected position is not available.	Check position.
6	Selected font is not available.	Check font.
7	Selected font is not available.	Check font.
8	Text cannot be fit in the selected field.	Check field size.
9	While measuring no label was found. Set label length is too large.	Restart measuring process. Check label length.
10	During the print order the ribbon roll goes empty. Defect at the transfer ribbon photocell.	Change transfer ribbon. Check transfer ribbon photocell (Service Function).
11	Stop bit error.	Check stop bits. Check baudrate. Check cable (printer and PC).
12	Parity error.	Check parity. Check baud rate. Check cable (printer and PC).
13	Loss of data at serial interface (RS-232).	Check baud rate. Check cable (printer and PC).

Error no.	Possible causes	Possible error correction
14	Received line number is invalid at RS-232 and Centronics.	Check sent data. Check connection PC - printer.
15	Invalid length of received mask statement.	Check sent data. Check connection PC – printer.
16	Transferred mask statement invalid.	Check set data. Check connection PC – printer.
17	No end of data found.	Check set data. Check connection PC – printer.
18	One res. several characters of the text is res. are not available in the selected font.	Change text. Change font.
19	Unknown transferred data record.	Check sent data. Check connection PC – printer.
20	For check digit control the entered res. received check digit is wrong.	Calculate check digit anew. Check code data.
21	Selected SC factor is invalid for EAN res. UPC.	Check SC factor.
22	Entered digits for EAN res. UPC are invalid < 12; > 13.	Check number of digits.
23	Selected check digit calculation is not available in the bar code.	Check calculation of check digit. Check bar code type.
24	Selected zoom factor is not available.	Check zoom factor.
25	Entered sign is not available.	Check offset value.
26	Entered offset value is invalid.	Check offset value.
27	Printhead temperature is too high. Defective printhead sensing device.	Decrease the print strength. Change printhead.
28	While cutting an error occurred – paper jam	Check label run. Check cutter run.
29	Entered data do not correspond to the characters allowed by the application identifier.	Check code data.
30	Selected application identifier is not available in EAN 128.	Check code data.

Error no.	Possible causes	Possible error correction
31	Continuous label mode is set. Printer has received command statement via interface, number of lines is < 2 Missing label length.	Deselect continuous mode or transfer a dummy line with Y coordinates = label length.
32	Real Time Clock function is selected but the battery is empty. Defective RTC.	Change or recharge battery. Change RTC component.
34	No print memory found.	Check memory assembly on CPU.
35	At start of a print order the printhead is up.	Move printhead down and start print order anew.
36	BCD error. Invalid format for the calculation of Euro variable.	Check entered format.
37	BCD error. Invalid format for the calculation of Euro variable.	Check entered format.
38	BCD error. Invalid format for the calculation of Euro variable.	Check entered format.
39	Flash component error.	Run a software update. Change CPU.
40	Invalid length of the received command statement.	Check sent data. Check connection PC – printer.
42	Drive error	Check the entered letter for drive.
43	Drive not formatted.	Format your drive.
44	Invalid file name	Check the file name (not allowed special characters were possibly used).
45	Path too long	Select another path.
47	Directory not file	Check the file name.
48	File already open	Check if the file is already in use.
49	No file(s)	Check the file name.
51	No more memory	Check the remaining storage space. Change the card. Delete files which are no longer used.

Error no.	Possible causes	Possible error correction
52	Main directory full	Delete files which are no longer used from the main directory.
53	Drive full	Delete files which are no longer used from the card.
54	File/directory exists	Check the file name and rename it.
55	File too large	
57	Invalid graphic file	The selected file does not contain graphic data. Check the file name.
58	Directory not empty	First of all delete all files from the directory.
62	Printer is equipped with wrong FPGA.	Set correct printer type. Change FPGA.
67	Wrong definition of column width res. number of columns.	Reduce the column width res. correct the number of columns.
68	Connected bar code scanner signals a device error.	Check the connection scanner/printer. Check scanner (dirty).
69	Scanner error: Bad print quality. printhead completely soiled or defective. Print speed too high.	Increase contrast. Clean or exchange printhead (if necessary). Reduce print speed.
70	Scanned data does not correspond to the data which is to print.	Exchange printhead.
71	As page number either 0 or a number > 9 is selected.	Select a number between 1 and 9.
72	JobPrint Page Selection not available or wrong string.	Check defined pages.
73	Page is not defined.	Check print definition.
74	Wrong format for customised entry.	Check the format string.
75	Wrong format for date/time.	Check format string.
77	Selection of print of several columns and also mirror/rotate.	Impossible to select one of both functions.
78	System file.	Not possible.

Error no.	Possible causes	Possible error correction
79	Faulty definition of shift times (overlapping times).	Check definition of shift times.
80	RSS bar code error.	Check definition and parameter of RSS bar code.
81	RSS bar code error.	Check sent data.
82	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	RSS bar code error.	Displace zero point sensors. Check sensors in service functions menu.
84	No font data available.	Execute a software update.

MAINTENANCE

When servicing or repairing, the DC switch has to be turned off and the cable disconnected from shockproof socket!

Cleaning of 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.

These cause a clear degradation of print quality such as:

- Differences in contrast and

- Arising of bright vertical bars.

In thermal print you should clean the printhead after each change of label roll and in thermal transfer print after each change of transfer ribbon.

Do not use sharp or hard objects for cleaning the printhead.
Make sure that you do not touch the protective coating of printhead with your hands.

Open top cover.
Take out transfer ribbon.
Open printhead by pressing the locking tenons.
Of on the printhead (see arrow) there is a label pieces or other stain, please use a soft cloth with industrial use alcohol to wipe away the stain.

We recommend weekly cleaning of printhead.
Please clean printhead with the appropriate cleaning card.

Adjustment of printhead

⚠️ Only experienced staff is allowed to open the printer and to carry out repairs and adjusting operations.

When printing with different label materials or using different ribbon types, unbalanced print quality may occur due to the media material differences, this it is necessary to adjust the thermal printhead pressure.

Open print cover.

Take out the transfer ribbon.

Turning the print head adjustment screws slightly by screwdriver to increase or decrease printhead pressure.

Adjustment of printline

An important characteristic for a high quality print is the parallelism of the focal line of the thermal printhead to the pressure roll. Because of the fact that the position of focal line of the printhead depends on fluctuations caused by production, it is necessary to set the parallelism.
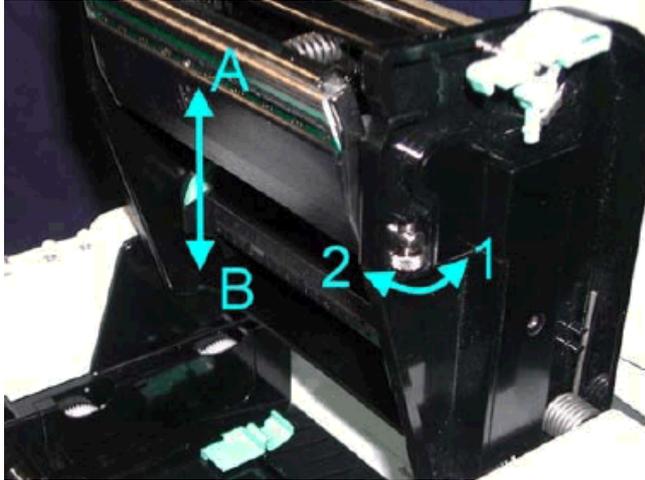
Use printhead adjusting gear to adjust the contacting surface between printhead and label. In order to get better printing balance and quality.

When turning printhead adjusting gear counter-clockwise (as arrow 1 shows), the printhead would move in a direction where arrow A is.

When turning printhead adjusting gear clockwise (as arrow 2 shows), printhead would move in a direction where arrow B is.

Adjustment of cutter

The label used for cutting is recommended to be at least 30 mm in height.

A cutter adjusting hole is present on both sides (where A is pointing to).

The cutter will not function properly if there is a paper jam. Turn the power off and use a M3 hexagon wrench inserted into hole A and open the cutter from right to left.

Power on the printer after clearing the paper jam, the cutter will return to the correct position automatically.

There is danger by moving parts. Keep away fingers and other parts of body!

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.

Our printers are exclusive for printing on labels, continuous paper and similar materials.

In case of questions referring to the practical handling of these conditions please contact us or your after-sales service station.

Transport and storage of our printers exclusively in original packing.

Installing and initial operation of printers **only** when the operating conditions are **fulfilled**.

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

Operation only by specially trained persons.

Note: We recommend to perform trainings regularly.

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

Only use original spare and exchange parts.

Conditions for the place of installation

The place of installation has to be plain and free of vibration. Currents of air 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 Commitee for Electrotechnical Standardization (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 inferred (e.g. by using thyristor controlled machines) anti-interference measures have to be taken:

- Provide separate power supply for 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

- Stray radiation according to:
  DIN EN 50081-2
  *DIN EN 55011 / 12.98
  *DIN EN 55022 7 4.98

- Stray radiation according to EN 61000-6-2:2001
  Electromagnetic fields according to DIN EN 61000-4-3:1995
  Discharge of static electricity according to DIN EN 61000-4-2:1995
  Fast transient burst according to DIN EN 61000-4-4 / 3.96
  Line connected disturbance, induced by high-frequent fields according to DIN EN 61000-4-4:1995
  Surge according to DIN EN 61000-4-5:1995
  Voltage interruption and voltage drop according to DIN EN 61000-4-11:1994

  * **Warning**

    This is a machine of the class A. This machine can cause radio interference at living areas. In this case the operator can require to execute appropriate measures and arise for it.

Connecting lines to external machines

All connecting lines have to be guided in shielded lines. The shielding has to be connected on both sides to the connector 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 and +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 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.

Max. line length:	Interface V 24 (RS232C) - 2 m (with shield)
	Centronics - 2 m (with shield)
	USB - 2 m (with shield)

Air convection

In order to avoid inadmissible heating free air convection has to be ensured.

Limit values

Protection according to 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 the 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.

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

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 it is possible that illustrations and examples shown in the manual are 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 of improving our manual.

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