Easy-Load DesktopThermal Printer

GEBE®

Elektronik und
Feinwerktechnik GmbH

Module und Geräte zum Eingeben,
Auswerten, Anzeigen und Ausdrucken
analoger und digitaler Daten.

GPT-437x
Small • Light Weight• Portable • Fast
RS232 • Infrared • USB
203 dpi • Text • Graphic • Barcode • Logoprint
Clock • Alarm • Buzzer
Charging Connection
for NiMH and Li-Ion Battery
Intelligent Power Management

Operating Instructions

Activities at GeBE
Printers: GeBE Elektronik und Feinwerktechnik GmbH • E-Mail: sales.ef@gebe.net • www.oem-printer.com
Keyboards: GeBE Computer & Peripherie GmbH • E-Mail: sales@tastaturen.comt • www.tastaturen.com
Internet applications: www.GeBE.net

Safety Instructions:

Please read the operating instructions before first-time operation !
During installation: Always disconnect the power.
Proper usage according to the operating instructions is required for product warranty. If the user attempts to repair the product, all factory warranties will be null and void. For technical questions, please contact the GeBE Technical Support.

⚠️ Attention

# 1 Unpacking, Safety Instructions

While unpacking, make sure that all parts are present and undamaged, and that you remove everything from the packaging. Claims for compensation due to transport damages can only be accepted, if the delivery agent is notified immediately. Please write a damage report, and send it back to the supplier with the defective part(s).

The standard versions of the thermal printer are available in various packages.
The following parts are included in all packages:
• printer • thermal paper, 5 rolls: GPR-T01-057-031-007-060A • charger • interface cable
operating instructions: SMAN-D-470 in German, or the SMAN-E-471 in English
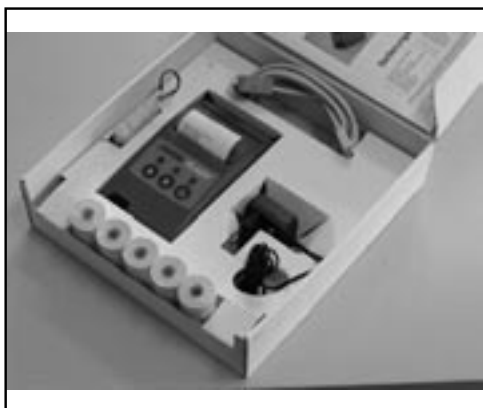
GPT-437x-FLASH-y-y-z-Sxxx-KD-LF*)
• printer
• thermal paper 5 rolls: GPR-T01-057-031-007-060A
• interface cable for RS232 or USB (for versions with interface con nector)
• installed battery, 4x Mignon (AA)
• charger
• operating manual SMAN-E-471in English or SMAN-D-470 in German

Also see: Description page 3
Possible Features for Printers of the Series GPT-437x on page 4

⚠️ Attention

There are considerable differences between the accessories for each printer type (matching interface cable, power supply).
Printers of the FLASH series that are not supplied as part of a set (OEM versions) can ONLY be ordered in sets of 10 units, accessories not included! Please order the accessories separately.

Driver Software
The driver software is available on the INTERNET. It can be downloaded at:
www.oem-printer.com/flash

Documentation for the System GCT-4379-FLASH
All current documents can be found on the internet at www.oem-printer.com/flash.
User manuals for the GeBE thermal printer controllers that are installed in the printers can be requested from GeBE via email (sales.ef@gebe.net).

Warranty
GeBE guarantees assured features of all supplied goods. The standard warranty period for OEM customers is 6 months, a longer period can be agreed and is verifed in writing. The warranty shall start with the date of delivery. Liability is void, if the customer does not claim defects immediately in writing.
You can find detailed information on product warranty in the terms of payment and delivery on our homepage at www.oem-printer.com (chapter: About Us), where it can also be downloaded.

Service
For service questions, please contact:
GeBE Elektronik und Feinwerktechnik GmbH
Beethovenstr. 15 • 82110 Germering • Germany • www.oem-printer.com
Phone:++49 (0) 89/894141-0 • Fax:++49 (0) 89/8402168 • e-mail: sales.ef@gebe.net

Additional Information
Please look for additional information about the series GeBE-FLASH at www.oem-printer.com/flash.
There, you will also be able to find your personal sales advisor, who you can address any questions you might have.
Or simply send an e-mail to the GeBE sales team: sales.ef@gebe.net
Please feel free to use our fax order number: ++49 (0) 89/894141-33

*) : x = 8 = "Low Cost"; x = 9 = "High Quality"; y-y- = interface(s); z =functions (e.g. magnetic card reader); Sxxx = specials no.; KD -= customer; LF = OEM or Set

2 Description

Printer Features **)

- Thermal printing on 58 mm wide paper
- Easy paper exchange through Easyload technology
- High resolution 203 dpi, 384 dots horizontally
- Text • Graphics • Bar code
- Macro functionality: batch file control
- Convenient parameter setting through OPD (OnPaperDisplay) menu
- Mobile, battery operated - charging circuit

Possible Interfaces:
- Serial RS232 interface or for OEM with 3,3V TTL
- USB Interface
- Bluetooth
- Infrared
  - IrDA
  - HP-IR protocol (unidirectional)
  - GeBE-IR protocol

Only GPT-4379:
- Charging with fixed voltage, e.g car (12 / 24V)
- Magnetic card reader
- Date/time from integrated, buffered clock with timer function
- Buzzer
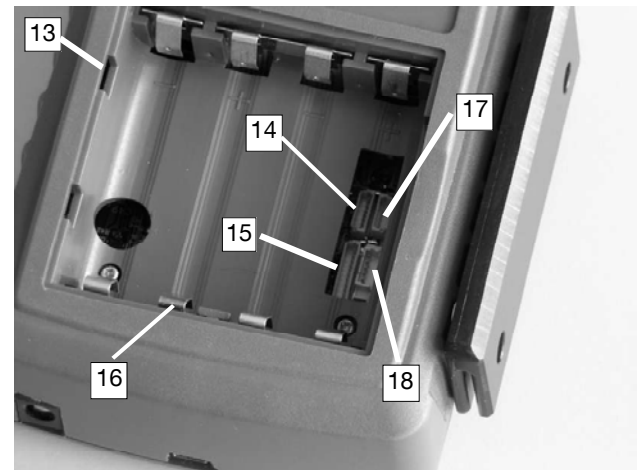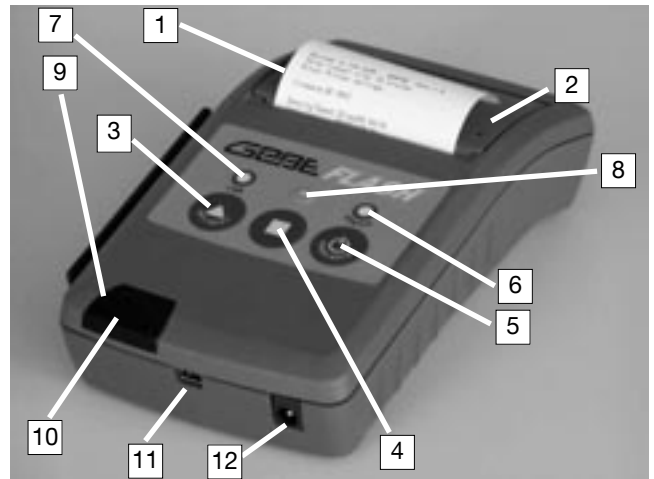
Parts and Functions of the Printer *)

1   Opening lever for paper compartment lid
2   Paper compartment lid
3   Key {OFF/NEXT}
4   Key {SET}
5   Key {FEED/ENTER}
6   LED "STATUS" (green/red)
7   LED "Line" (yellow)
8   LED "M-Card" (yellow)
9   LED "Communication" (yellow)
10 Window for IR transmitter / receiver
11 Serial interface (RS232 or USB)
12 Power supply connector
13 Battery compartment lid - spring-bolt lock
14 Battery connection - connector pair, 7pin
15 Program update connector, 12 pin
16 Spring contacts for battery connection (not all version)
17 Battery connector pair, 6pin
18 Magnetic card update connection, 5 pin

**) in the whole document:
features depending on the printer version

Summary about the options for expanding the GeBE Desktop Thermal Printer Series GPT-4379-Flash

Blockplan System GCT-4379

Stand: 25.02.2003 gb
File: Prod: GCT-4379/Dok

GeBE Elektronik und
Feinwerktechnik GmbH
www.oem-printer.com

Possible Features for Printers of the Series GPT-437x

Article No.	GeBE Series FLASH — The Series GPT-4379-FLASH is equipped with the Controller GCT-4379,(different options possible)	EEPROM kByte	Power						Funktions									Interfaces							Options			
			Fixed Voltage 4,5 - 6,5V	Non rechargeable batteries / externally charged batteries	Batterie-pack 4x NiMH (rechargeable)	Li-ION-batteries	Charging battery with unregulated 9V	Charging through Fixed Voltage	Number of keys	Status LEDs (DUO =1/2)	IR communication LED	Charging Voltage LED	OPD Menu	Batch Files TINIT/LOGOS	Clock with Alarm	Buzzer	Serial Interface RS232	TTL	IrDA	HP-IR-Protocol	GeBE-IR-Protocol	Bluetooth	USB	Winder	Magnetic Card Reader	IR-Booster LED	Extended SPI Bus
11897	GPT-4379-FLASH-HQ	32	**)	**)	x	**)	-	x	3	2	x	x	x	x	x	x	x	**)	x	-	x	-	-	**)	**)		**)
11898	GPT-4378-FLASH-LC	8	**)	**)	x	**)	x	-	2	2	-	-	x	x	-	-	x	**)	x	-	x	-	-	-	-	**)	-
11841	GPT-4378-FLASH-BT	8	**)	**)	x	**)	x	-	2	1 / 2	-	-	x	x	-	-	-	-	-	-	-	x	-	-	-	**)	-
11840	GPT-4378-FLASH-USB	8	**)	**)	x	**)	x	-	2	1 / 2	-	-	x	x	-	-	-	-	-	-	-	-	x	-	-	**)	-
11899	GPT-4378-FLASH-HP	8	-	x	-	-	-	-	2	1 / 2	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	**)	-

The article numbers stated in this table refer to the FLASH version in the set.   **) options

3 Connecting the Printer

> **Before Installation:**
> ## Always disconnect the power in the system !
> Attention

Voltage Supply
The different printer versions are powered from specific power sources
- a rechargeable battery pack (Standard NiHM cells)
- Li-ION batteries (rechargeable)
- from a stabilized power supply (5 V, 1.5 A)
- from 4 Mignon (AA) non-rechargeable batteries

Charging the Internal Battery Pack
The battery pack includes 4 NiMH Mignon (AA) cells. It also has a temperature sensor to monitor the battery temperature. A circuit-breaker is integrated to protect against short circuits.

The battery is connected with a 7 pin connector through connection (14) on the controller board. This is done through the window in the battery compartment. The plug-in power supply for charging (8-28VDC unregulated) is equipped with a connection cable and a plug that fits socket (12), which is polarity protected. The plug-in power supply for charging is part of the supplied set has a connection cable with the matching connector plug attached. It will supply the required charging current at about 12V-DC, which is controlled by the internal charging circuit. This will recharge the battery in about 4 h. However, if the battery is over-discharged, a formatting charge with a low current (<10 mA) is processed first. When the battery voltage has reached a certain level (after app. 1-5 minutes), the controller will start the charging process and turn on the green LED (6).

During the charging process, this LED, which is located on the control panel, will signal through different flashing sequences, whether the fast or the trickle charge mode is active. With one full battery charge (1.500 mAh), the printer can print about 50 m of paper with 15% blackening (normal text). As an option, a dual cell Li-Ion battery can be installed in order to increase the print speed and the life time, and to avoid the memory effect of the NiMH battery in the long term.

Battery Operation
In an OEM-version the battery compartment has battery contact springs (16) for Mignon (AA) cells for the operation with externally charged batteries, or with non-rechargeable batteries. This printer version does not include an internal charger. It can be adjusted to different battery efficiencies by command.

This version is powered either through 4 non-rechargeable power batteries or 4 externally charged batteries (Mignon, AA).

> Attention
> **For battery operation, please use reliable alkaline batteries type LR6. Carbon zinc batteries (type: R6) are NOT suitable for the GPT-4378/79!**

Stabilized Power Supply
In a special OEM version, the printer can be operated with a stabilized power voltage (4.5 to 6.5VDC) through the socket (12). A suitable external power supply for this version is available from GeBE.

The GPT-4379/79 Power Managements

Whenever the printer does not have data to process, it will switch to idle mode. In this mode, it appears to be 100% active and ready to accept data. The power consumption in this mode is typically 5mA.

Sleep Mode

If a sleep time has been set via menu, the printer will switch to the power-down mode after the set time has passed. Any kind of data transfer (even infrared), activities on control lines, connecting the charger, or simply pushing of the FEED/ENTER button will reactivate the printer immediately without changing its settings. Only the print buffer will be erased.

The necessary reactivation and waiting for the ready message of the printer has to be considered in the printer drivers.

The power-saving sleep mode can be turned on or off through the following functions:
• print settings menu

• command from the host or from the batch file TINIT

Power Off

The printer is switched off by holding down the"OFF/NEXT"button for >3 seconds. It is turned on by pressing the FEED/ENTER button. There is a component option available that allows the user to switch on the printer through the RTS line.

4 Interfaces

Serial Interface

The interface cable GKA-406 that comes with the sets connects plug-in connector (11) with the RS232 connection (COM interface) of a PC on the other end. An open-ended cable GKA-414 with 5 single wires is available as an option.

TTL Interface
A special version with 3.3 V TTL levels is available for OEM.

GeBE COM
Describes a cable-bound RS232 interface with the error-proof protocol of the GeBE IR protocol. Also see: Infrared Interfaces.

Pin Assignment of the Serial Interface RS232 (V.24) at Connector (11)
Connector at the printer: (5pin). >>> cable: GKA- 483- 2- 2000 (art. no.11953). The other end has a 9 pin SUB-D socket. The assignment is 1:1 matching the serial COM interface of the PC.

GCT-4378/79 Flash 5pol Mini-USB Connector			Assignment Cable GKA-483	COM-Interface PC 9pol SUB-D	
Pin	Signal	I/O	Comment	Signal	Pin
1	CTS	O	If the level is logic-true, the controller can receive data.	CTS	8
2	TxD	I	Print data	TxD	3
3	RxD	O	Error messages and Xon/Xoff messages	RxD	2
4	(V$_{AUX}$)/RTS	I/O	VP, VCC, or RTS selectable at the factory through solder bridges	RTS	7
5	GND signal	GND		GND signal	5
	screen		At the controller, screen is connected to GNDF (Frame-Ground)	screen	1.4.6.9 = NC

Timing of the Serial RS232 /TTL Interface
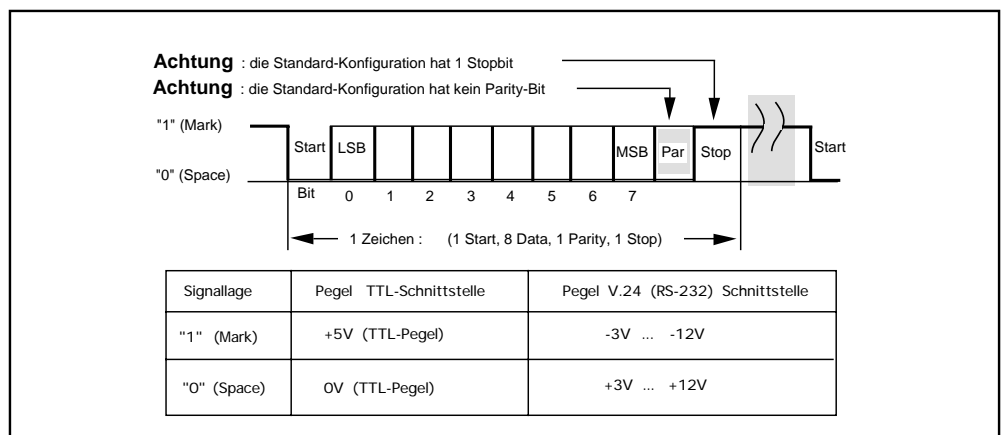The standard timing is shown in the diagram.
For printers with EEPROM, the data format can be set through the print settings menu.

Standard Data Format
• 9,600 baud
• 8 data bits
• no parity bit
• 1 stop bit

Selectable Data Formats
• 1200 - 115200 baud
• 7/8 data bits (software !!)
• odd, even, no parity bit
• 1 / 2 stop bits

Achtung : die Standard-Konfiguration hat 1 Stopbit
Achtung : die Standard-Konfiguration hat kein Parity-Bit

"1" (Mark)
"0" (Space)

Start | LSB | | | | | | | MSB | Par | Stop | Start
Bit | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7

1 Zeichen :   (1 Start, 8 Data, 1 Parity, 1 Stop)

Signallage	Pegel TTL-Schnittstelle	Pegel V.24 (RS-232) Schnittstelle
"1" (Mark)	+5V (TTL-Pegel)	-3V ... -12V
"0" (Space)	0V (TTL-Pegel)	+3V ... +12V

Infrared Interfaces

All standard versions of the printer have an IR transmitter/receiver, so the protocols IR-GeBE protocol and IrDA are available for all printers of the series GPT-437x.

The printer has an internal IR tranceiver installed directly below the red foil window (10). Next to it, a red LED will light up, whenever IR communication is in operation.

It is important to consider that infrared transmissions only work "at sight". Between transmitter and receiver, there may be no shadow casting object. The radiation angle is about 15 degrees. The transfer distance, which strongly depends on the efficiency of the opposite side, is about one meter. It can be expanded to < 3 meters by installing a booster-IR LED.

While the GeBE-IR protocol and the IrDA protocol act bidirectionally, the HP-IR protocol only works unidirectionally, i.e. the printer receives print data, but cannot send any messages (like buffer full) back. The timing of the data transmission is tuned in a way, that the printer will always be able to print all data that is sent without any loss of data.

The following protocols can be realized:

- **IrDA:**   IR LPT (Printer Service)
IR COMM (Modem Service)
also see: www.irda.org
- **GeBE-IR:** Simple, error-proof, bidirectional,
dot to dot IR-protocol.
GeBE doc.no. MAN-D-394
- **HP-IR:**   Unidirectional IR-Transmission
GeBE doc.no. MAN-D-416

Operation

When the settings "IrDA "or "GeBE IR" are selected, the IR receiver is also active in sleep mode. Therefore, the device does not have to be turned on explicitly for printing. The power consumption of the printer is only about 25 µA in this mode. However, for longer periods of inactivity, the printer should be turned off.

When the setting "HP-IR" is selected, the IR receiver is turned off during sleep mode. Therefore, the device has to be turned on explicitly for printing. The power consumption is only about 18 µA in this mode. However, for longer periods of inactivity, the printer should be turned off.

USB

The GPT-437x-FLASH-USB corresponds to the USB specification V1.1 for full-speed devices. The printer is compatible to USB V2.0 bus systems. The USB device class is equivalent to a "Vendor Specific Device".   Therefore, transmission can be done with virtual COM port drivers. The printer will operate like a serial printer.

The virtual COM port driver is available for the operating systems Windows 98/98SE/ME/2000 and XP, and possibly WinCE from the second quarter of 2004. For Linux V2.40 and up, there is a direct Kernel support. Therefore, a driver is not required. Standard GeBE printer drivers can be used.

Operation

Before the first operation, the matching virtual COM port driver and the printer driver have to be installed. The COM settings of the virtual COM port have to be set in accordance with the printer settings (recommended: 115,200, n, 8, 1, XON/XOFF). If sleep mode is selected for the printer, it will go into sleep mode after the set time period.
However, the USB interface will remain active, directly supplied from the USB bus. A new print job with the standard drivers will reactivate the printer without any loss of data. In a USB suspend mode, the internal USB interface is also turned off. The printer will 'go to sleep' after the set sleep time period.

Pin Assignment of the USB Interface. Connector Type: Mini USB Typ B

5pol Mini-USB-Connector			Assignment Cable GKA-4xx
Pin	Signal	I/O	Comment
1	Vcc USB		+5V from USB bus / only supplies the internal USB interface
2	D-	I/O	USB data line
3	D+	I/O	USB data line
4	NC		
5	GND	GND	GND
	screen		At the controller, screen is connected to GNDF (Frame-Ground)

USB Specification	V1.1 (V2.0 compatible)			
Device Type	Vendor Spcific Device			
Speed	Full Speed			
Printer Power consumption	Not printing	min.	Typ.	max.
	USB active /Printer active		30 mA	
	USB active /Printer sleep		25 mA	
	USB suspend / Printer sleep		300 µA	

Bluetooth

The GPT-437x-Flash-BT corresponds to the BT speci-fication V1.1 class 2, attaining a transmission range of about 10 -15 m. If you require a longer transimission range, please contact us. The printer can be operated with a customary BT dongle that comes with a virtual COM port driver.
A remote RS232 station is also available.

Operation
Recommended settings of the printer: 115,200, n, 8, 1, XON/XOFF .
The printer responds to an inquiry scan with its name "GPT-4378/79-Flash" and its BT address. However, it can also be addressed directly, without a scan, with its BT address.
A "BT connect" activates the printer. The printer will maintain a connection until it goes into sleep mode. The online power consumption of the printer with an active BT link is about 35mA. The sleep mode discon-nects an active connection and activates the BT sniff mode. In this mode, the printer scans its environment for possible calls every 1.25 seconds. During these inquiry scans, it remains visible and responsive. It will then take about 2-3 sconds to establish a connection.

The power consumption in this mode is about 1.5mA. When the printer is reactivated through the feed button, the BT tranceiver will remain in sniff mode. After the set time period, the printer will go back into sleep mode. The power consumption in this mode is about 5mA.

If you are not planning to operate the printer for several days, switch it off with the OFF/NEXT button. After the power is turned on, it will take a minimum of 10 seconds for the printer to become ready to recieve data.

Bluetooth Specification	V1.1			
RF transmit level	4 dBm (class 2)			
Range	app. 10 -15 m			
Profiles	SPP Sertial Port Profile			
Printer Power consumption	Not printing	min.	Typ.	max.
	Active Link/Data traffic at 115 kbps	50 mA	62 mA	85 mA
	Active Link	25 mA	35 mA	45 mA
	Idle	18 mA	25 mA	30 mA
	Sniff Mode (1,25 sec. scan)	1 mA	1,5 mA	2,5 mA
	Power off	0 µA	0,5µA	0,9 µA

5 Operation: Inserting Paper, Batteries

Replacing the Paper

Which thermal paper can be used?
The printer is specified for a paper width of 57.5 ± 0.5mm, a roll diameter of 31 mm, and a paper thickness of 60 g/m2. The matching paper rolls GPR-T01-057-031-007-060A (quality: 5 years) are available from GeBE. Other papers might cause failure.

Which side of the thermal paper can be printed on?
Usually, the printable side of a thermal paper roll is on the outside.
See: Error Detection and Recoveryon page 15

How is the paper roll inserted?
1. Unwind about 10 cm of paper from the roll. Hold the layers tightly wound, and open the lid of the printer by slightly pulling the LEVER inside it upward.
2. Put the paper roll in the paper compartment making sure that the outside is turned toward the printer.
3. Close the lid by pressing on it. It will audibly snap into place, so that the paper can be torn off at the tear-off edge without the lid opening up, and without the paper sliding through the print head.

Exchanging Batteries
4. The lid of the battery compartment on the bottom of the printer can be easily opened by pressing a coin against the spring latch.

Exchanging battery packs:
The 7 pin battery connector (14) is accessible through the window in the bottom of the battery compartment. By pulling on the connection cable of the battery pack with force, connector (14) is unplugged from the socket. The connector of the new battery pack can be plugged in using taper-nose pliers (tweezers). See Description on page 3.

⚠ Attention	For operations with a clock, you have about a minute to exchange batteries, before the clock looses its setting.

Replacing battery cells (printer version with battery contact springs battery compartment):
Each cell has to be oriented according to the polarity as shown at the bottom of the compartment (alternating from one position to the next).

Paper Feed Button (5)
With this button, the printer can be reactivated from the sleep mode, and the paper can be fed forward.

Self test: Even before a connection to the host (PC) has been created, the printer function can already be checked by starting a self test. For this, the paper feed button (5) {FEED} is held down, while the printer is reactivated. If the button is held down for at least 3 seconds, the self test will start, checking the functions of the inner circuit, but not the interface functions. Software version and character set will be printed. For OEM, special printouts can be activated.
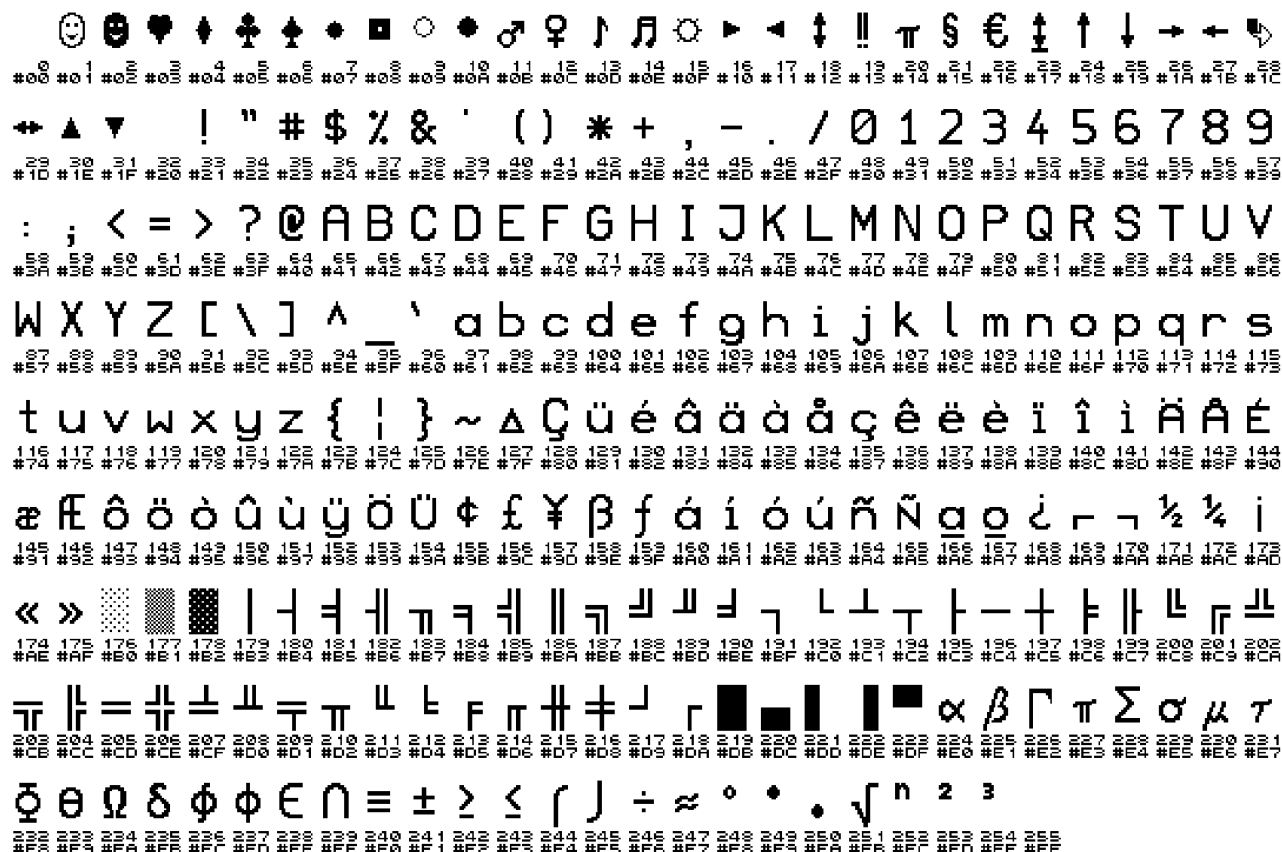
1.
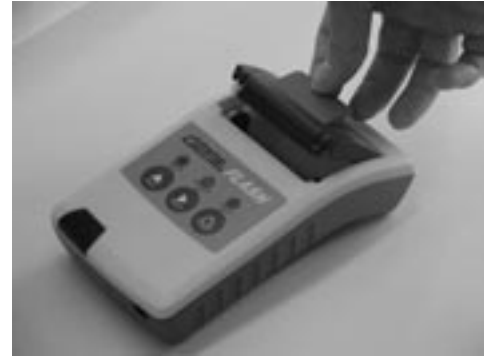
2.

3.

4.

6 Character Sets

The flash memory of a standard controller contains four character sets that can be selected. Other character sets available on request. The euro character is located at 16 hex.

GeBE Standard Character Set: Similar to IBM II Code Table 850

Font Sizes of the Character Sets

Font No.	Dots (horiz./vert.) cpl	
1	16 / 24	24
2	9 / 22	42
3	7 / 16	54
4	12 / 24	32

Optionally Available Character Sets

The following character sets are currently available and can be programmed into the FLASH memory of the µ-processor in exchange for other character sets. Please contact us with your inquiry.
On request, GeBE can also create other character sets.

	Dots (horiz. x vert.) Characters / Line	
IBM II	16 x 24	24
IBM II	14 x 22	27
IBM II	11 x 22	34
IBM II	9 x 22	42
IBM II	7 x 16	54
IBM II 90°	16 x 11	"24"
Kyr	16 x 24	24
Kyr	14 x 22	27
Kyr	11 x 22	34

Optional Character Set: Cyrillic
Base: IBM Code Table 850

7 OPD-Menue

All parameter sets can be easily changed with a press of a few buttons using the OPD (On Paper Display)-Menue. This way, they can be retrieved at any time and easily understood with the printout.
This replaces tedious accessing of DIP switches, or the programming through a terminal program.
The OPD-Menue is operated with only two buttons (OFF/NEXT and FEED/ENTER)

Description of the Button Functions

The buttons can have different functions depending on the status – normal operation or print settings menu. The time for which the button is pressed down is also an issue.

Normal Operation

Button FEED/ENTER	Button OFF/NEXT	Action
pushed	not pushed	Paper feed by one line
pushed > 2s	not pushed	Continuous paper feed
pushed during power-on < 1s	not pushed	Reactivation, no paper feed
pushed during power-on with paper > 2s	not pushed	Calling T0 (self test)
pushed during power-on without paper > 2s	not pushed	Initiating hexdump mode (T17)
pushed in Hexdunp-Mode without paper	not pushed	End of hexdump mode (T18)
not pushed	button released after < 1s in normal paper mode	Calling T1 (= form feed)
not pushed	button > 3s pushed	Calling T2 (= immediate PWDN)
pushed	pushed	Calling up menu (menu_scan)

Print Settings Menu

Button FEED/ENTER	Button OFF/NEXT	Action
pushed	not pushed	Increasing the parameters
not pushed	pushed	Moving to the next menu item
pushed	pushed	Leaving menu and saving settings

Weitere Informationen über GeBE im Internet: www.oem-printer.com

Menu navigation

Welcome to the GeBE **OPD** menu 1.0
Setup timeout after 10 minutes
Actual printer settings:

Firmware:	GE-xxxx

Density/Speed:	25/med(64/24)
Interface:	RS232/USB/Blue
COM:	57600,n,8,Tx+
Sleep time:	1 min
Font #:	4
Char. format:	D0,W0,H0,S0,48

? Change actual settings
        Press ENTER to change
        Press NEXT to skip
        Press NEXT+ENTER to save and exit

        PRINTER SETUP:
        Press ENTER to modify
        Press NEXT to store and continue
        Press NEXT+ENTER to save and exit

Density:	25	20, 25, 30, 35, 40, 45, 50, 90(2ply)
Speed/Quality:	med(64/24)	low 32/24, medHQ 64/24, medLQ 64/48, high 128/48
Interface:	RS232/USB/Blue	RS232/USB/Blue, IrDA, GeBE-IR, GeBE-COM
Baudrate:	57600	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200.
COM parameter:	n,8,Tx+	n, 7, Tx+ / o, 7, Tx+ / e, 7, Tx+ / n, 8, Tx+ / o, 8, Tx+ / e, 8, Tx+ / n, 7, Tx- / o, 7, Tx- / e, 7, Tx- / n, 8, Tx- / o, 8, Tx- / e, 8, Tx-
Sleep Time:	1 min	OFF, 5 sec, 30 sec, 1 min, 10 min, 1 h, 12 h, 32 h
Font #:	4	1, 2, 3, 4
Text orientat:	Textmode (D0)	Textmode (D0), Datamode (D1)
Char. size :	W0/H0	W0/H0, W0/H1, W0/H2, W0/H3, W1/H0, W1/H1, W1/H2, W1/H3,
Char. spacing :	0	0,1,2,3,4,5,6
Print width :	48 mm	48 mm, ... 32 mm

? Return to default settings
        Press ENTER to change
        Press NEXT to skip
        Press NEXT+ENTER to save and exit

17.03.03 17:33

? Change date / time
        Press ENTER to change
        Press NEXT to skip
        Press NEXT + ENTER to save and exit

        RTC SETUP:
        Press ENTER to modify
        Press NEXT to store and continue
        Press NEXT+ENTER to save and exit

Year:	03	00 .. 50
Month:	11	01 .. 12
Date :	14	01 .. 31
Hour :	13	00 .. 23
Minute :	33	00 .. 59

8 Magnetic Card Reader

The magnetic strip can contain up to three tracks with serial data. The recording density and the number of bits per character of each track are different in accordance with ISO 3554. They result in the maximum number of characters that can be saved on each track.
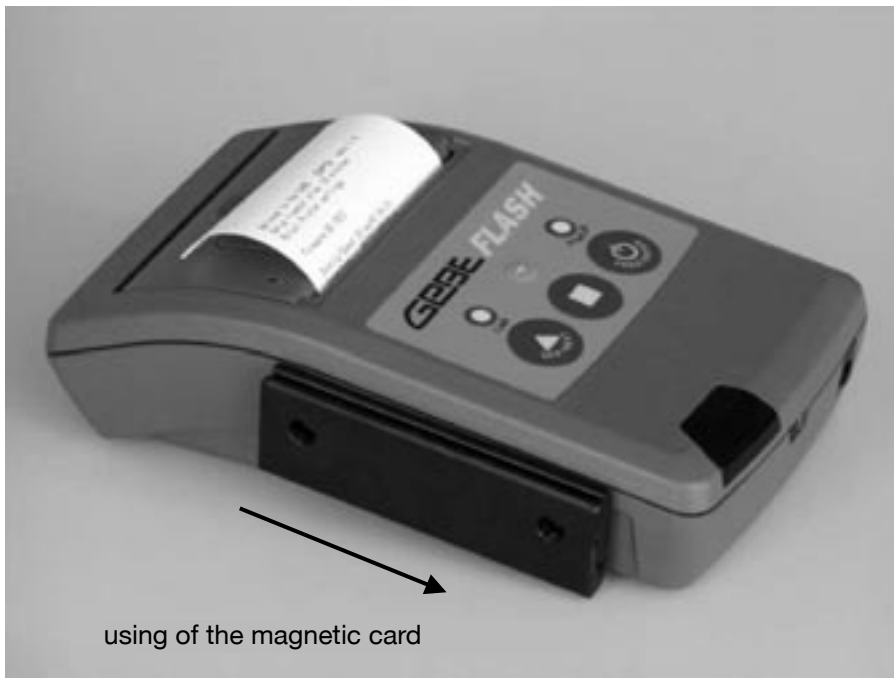
For track 1, the maximum is 79 characters, for track 2 , it is 40, and for track 3, it is 107 characters, including the start and the stop character.

In accordance with the norm, track 1 and 2 are only read during operation. Track 3 is the only one that is also used for recording.

Operation:

After the swiping of the card, the LED lights up for about 2 seconds, if the card was read correctly. If an error occured, LED 6*starts flashing rapidly.

While the LED is on, another reading process is not possible. After it has gone out, the internal buffers are getting ready for the next reading process, waiting for a new card to be swiped.

using of the magnetic card

ALPHA Characters		
P 543210	hex	
1 000000	00	space
0 000001	01	!
0 000010	02	,,
1 000011	03	#
0 000100	04	$
1 000101	05	%(start)
1 000110	06	&
0 000111	07	'
0 001000	08	(
1 001001	09	)
1 001010	0A	*
0 001011	0B	+
1 001100	0C	,
0 001101	0D	-
0 001110	0E	.
1 001111	0F	/
0 010000	10	0
1 010001	11	1
1 010010	12	2
0 010011	13	3
1 010100	14	4
0 010101	15	5
0 010110	16	6
1 010111	17	7
1 011000	18	8
0 011001	19	9
0 011010	1A	:
1 011011	1B	;
0 011100	1C	<
1 011101	1D	=
0 011110	1E	>
0 011111	1F	? (end)
0 100000	20	@
1 100001	21	A
1 100010	22	B
0 100011	23	C
1 100100	24	D
0 100101	25	E
0 100110	26	F
1 100111	27	G
0 101010	28	H
1 101011	29	I
1 101000	2A	J
0 101001	2B	K
0 101100	2C	L
1 101101	2D	M
1 101110	2E	N
0 101111	2F	O
1 110000	30	P
0 110001	31	Q
0 110010	32	R
1 110011	33	S
0 110100	34	T
1 110101	35	U
1 110110	36	V
0 110111	37	W
1 111010	38	X
0 111011	39	Y
0 111000	3A	Z
1 111001	3B	[
1 111100	3C	\
0 111101	3D	]
0 111110	3E	^(field)
1 111111	3F	_

Numeric Characters		
P 3210	entspr	Bedeutung
1 0000	0	
0 0001	1	
0 0010	2	
1 0011	3	
0 0100	4	
1 0101	5	
1 0110	6	
0 0111	7	
0 1000	8	
1 1001	9	
1 1010	:	control
0 1011	;	start sentinel
1 1100	<	control
0 1101	=	field seperator
0 1110		control
1 1111	?	end sentinel

9 Status Messages through LEDs

LED "STATUS" (green) (6)
The STATUS LED flashes green, when everything is in order. It flashes read, whenever an error occurs. During fast charging, the STATUS LED flashes green, while it lights up permanently green during trickle charge.

Only for GCT-4379
LED "IR Communication" (yellow) (7)
During the transfer of data, this LED lights up yellow under the IR window.

LED "Line" (yellow) (8)
This LED signals an input voltage between 10 and 28V.

LED "M-Card" (yellow) (7)
Whenever the reading of a magnetic card has been successful, the LED lights up once for about 2 seconds. Otherwise, 3x shortly.

Buzzer GCT-4379
The buzzer can be controlled by command from the host. Whenever a magnetic card has been read successfully, the buzzer will beep once for about 2 seconds. Otherwise, 3x shortly.

Status Messages of the Printer through the Interface
Besides the optical status messages displayed by the three LEDs on the control panel of the printer, messages are also transmitted through the serial interface. Most of the time, they are sent as single ASCII characters that can be analyzed by the host.

The following table shows all status messages.

Status Messages	Serial Interface			Comments
	Feedback through the Serial Interface	on:off /flash frequency fast: "S" app. 0.66Hz medium: "M" app. 0.33Hz slow: "L" app. 0.16Hz		
		Status LED		
Faultless Operation:			green	
After reset	"R"			Level on the status lines only short-term during phase of initialization. Message: <X$_{ON}$> "R" "X" (or error)>
After watchdog reset	"R"			Crashing program
End of error	"X"	1:31 / M		Also after hardware, software, and watchdog resets
Buffer empty	X ON			Buffer emptied by 22 characters <DC1> = $11
Buffer full	X OFF			Space for 22 more characters in buffer <DC3> = $13
Synchronizing feedback	all characters			Processing of synchronizing commands; each transmitted character
Battery charging:				
Formatting		"L"	off	L := charge start l := end of charge
Fast charge	"I"	"L"	LED permanentally on	L := charge start l := end of charge
Trickle charge	"f"	"F"	LED flashing (1:3)	F := charge start f := end of charge
Errors:	start	error end		
Paper end	"P"	"p"		After paper has been inserted, the printer waits for about 2s before printing in order to allow for enough time for the mechanism to be closed.
Temp. low	"K"	"k"		Print head temperature too low
Temp. high	"T"	"t"	1:1 / S red	Print head temperature too high
Vp too low	"U"	"u"		
Vp too high	"M"	"m"		Theoretical message, since the voltage limit lies below the reset threshold.
Parity error	"?"			Parity or framing error / no interruption of printing
EE-OK	"E0"			EEPROM command completed without errors
EE-invalid	"E1"			Invalid text file no.
EE-password	"E2"	1:31 / M green		Wrong password for EEPRROM access
EE-overflow	"E3"			Text file memory overflow
EE-time out	"E4"			Programming time for EEPROM byte exceeded
		IR-Communication		
IR reception		LED On	yellow	
		Magnetic card reading		
Successful Read		LED On 2Sec.	yellow	
Unsuccessful Read		3x shortly LED On		
		Charging voltage		
Charging voltage OK		LED On	yellow	LED will light up, if voltage is higher than 9 - 10 V in order to signal a sufficient charging voltage.

10 Batch Files

Almost all commands that the printer can receive through the interfaces can be put into the batch files. When a batch file is processed, the commands it contains are added to the data stream of the print program sequentially, as if they were coming through the interface from outside. This way, all settings that can be done by command can be processed via batch file. Besides settings commands, batch files can also contain text and graphics.

The file structure consists of one TINIT, which is processed with each system boot-up, as well as 10 files that can be used freely, which are retrieved by command. Some of these files can be addressed through additional events. If the controller has an EEPROM, it contains a file structure that is identical to that of the program memory (FLASH).

When a filed is retrieved, the printer will check, if it contains data in the EEPROM. If it does not, the file will be processed in the FLASH. This allows FLASH files to be over-written.

The following batch files are accessable:
Allocated in the FLASH Memory, Factory Settings:
• "TINIT" ...settings after hardware RESET

• "T0 " .....self test through FEED button after reset
• "T1 " .....form feed through NEXT button < 1 sec.
• "T2 " .....turning off through OFF button > 3 sec.

ATTENTION: By using these files in the EEPROM you are changing the standard factory settings!

• "T3 - T9" : unused

Text or Graphics, Batch Files in the EEPROM
If large pieces of text or graphics have to be filed in the batch files, e.g. in order to be able to print out logos, advertising text, or operating instructions with the push of a button,insted of the serial EEPROM with a capacity of 8KByte EEPROM (about 6KBytes usable for logo printing) a 32 KByte type can be installed.

Creating and Saving Logos
A special printer driver is available for creating logos. (logo.drv)

This Windows driver moves logos that have been created with a graphics program to a usable file for the printer. The new file contains the command for saving the logo file in the printer, however, the 16 bits file length minus the 6 bytes still have to be entered in the byte positions 8 and 9. Please refer to the software manual about saving files in the EEPROM.

Configuring the Printer with TINIT
After a hardware RESET (turning on the power supply), the controller will first process the basic initialization from the flash program and the batch file "TINIT-F".

Then it will check, whether a TINIT file already exists in the EEPROM. If it does exist, it will process these commands and will then be ready for operation. if not, the TINIT is processed in the flash with the factory settings.

(The following function is only introduced with firmware version 2.0. In earlier versions, the menu section is separate and cannot be changed.)

Menu and TINIT:
The OPD-Menue is a tool to manipulate the TINIT in the EEPROM. The OPD-Menue requires a certain structure in the menu section in order to work.
If this structure is changed, the menu may no longer work properly.

The following TINIT file is a basic file to be changed by the user.
It can be downloaded from the Internet at this URL: www.oem-printer.com/flash/xxxx.
The file will erase the TINIT, while printing all actions (Italics).
By changing the parameters in the menu section, the menu can be preset.
In the unused section, any commands may be entered. If a command from the menu section is repeated in the unused section, this value can no longer be changed through the menu.

Erase Tinit ...
<ESC>uUERAS
Sondernumer S-??? / Stand 24nov03
Programmiere Tinit mit GE-xxxx...

	{Commentary}
<ESC>s@PROG<00h><32h>	
	{MENU SECTION:}
<ESC>Y<18h>	{density}
<ESC>[<DEZ64><DEZ24>	{power consumption}
<ESC>	{interface}
<ESC>]<DEZ115><DEZ40	{baud rate, settings}
<ESC>e<DEZ5><DEZ2>	{power-down time}
<ESC>P4	{font}
<ESC>D0	{text orientation}
<ESC>W0<ESC>H0	{text size}
<ESC>S0	{text spacing}
<ESC>h48	{printing width}
	{UNUSED SECTIONS:}
<ESC>r1<28h><3Ch><01h><12h>{charging parameters}	
<A9h><01h><3Ch><01h><40h>	
<19h><01h><85h><0Ah><8Ch>	
<ESC>]<DEZ0><DEZ0	{activate interface}

Everything pvrogrammed!

11 Error Detection and Recovery

Not every error means that there is a printer error that can not be cleared by the user.
Users will save time and money by recognizing and clearing simple errors on their own.
The following tips are meant to help with this:

Hardware RESET: Triggered by removal of the power source (battery) and replacement after a short break. This causes the printer to be set to the parameters in the batch file TINIT-F or TINIT-E. See Batch Files on page 14.

Test printout: Is triggered by holding down the FEED feed button for more than 3 seconds after reactivation from power OFF (switching off with the OFF/NEXT button). See Paper Feed Button (5) on page 8.
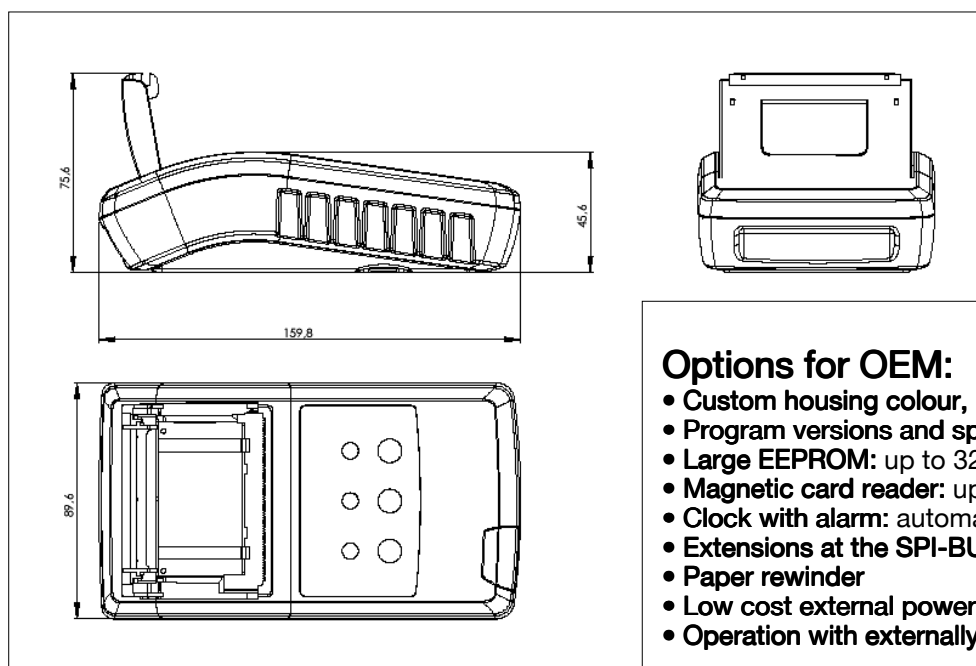
Hexdump mode: Is triggered by holding down the FEED button for more than 3 seconds after reactivation from power OFF, if no paper is inserted. After the paper has been inserted, the printer prints the data it recieves as hex numbers with the appropriate ASCII code without interpreting the data. This shows, which information the printer "reads" from the recieving data.

Symptom	Possible Cause	Remedy
The printer seems to be printing. Paper is transported, but is not blackened.	Paper: Wrong side toward print head. Only one side of the paper can be printed on.	Insert paper correctly. The thermosensitive side should be turned to the outside of the roll (most of the time). Try the finger nail test: Drag the tip of a finger nail across the paper, pressing down. The friction heat causes the thermosensitive side to blacken.
Printer can not be reactivated by pressing the FEED button.	No power. **Rechargeable battery:** not charged. **Batteries:** not inserted, empty	Check power supply. Recharge battery. The green LED should light no later than after 1 minute.
LED goes out just briefly at the beginning of printing. The printer only prints a few dots in one line. The paper feed works, but the self test does not. The printer only prints a few characters in one line. If more is entered, it stops printing completely.	The power supply is not optimal. **Rechargeable battery:** not charged. **Batteries:** empty, bad quality, no batteries inserted. **External power supply:** cross-section of power feeding lines to small, Current output of the power supply too low.	**Batteries**: Different qualities are available. Only use batteries that are able to supply high currents, and that have a high energy capacity. **External power supply:** Use power supply with sufficient dimension and short feed lines. Check all connections for possible transfer resistances. Since high peak currents occur with thermal printers, even the smallest transfer resistances can result in intolerable voltage drops. In this case, no power supply would be strong enough.
After a few characters, the printout starts to be incomplete.	The printer buffer is "over-run" (256 bytes), causing a loss of data. The print data transmitter shows no reaction to handshake.	Use or check handshake. (software: Xon/Xoff or hardware: CTS). If necessary: slow down transmission speed, e.g. down to 1,200 baud.
The printer prints the wrong characters.	Interface problem. The transmission is faulty. (Characters of the upper area are printed.).	Use correct interface level (RS232, TTL?). Is the transmission cable too long?
	Wrong data format was set. ("?" is printed repeatedly.)	Select the correct baud rate through the menu. Check data format.
	External power supply: Bad ground connection, that causes a part of the printing current to flow through the interface cable. This leads to an increase in potential there, which causes data corruption.	Check and improve ground connection. Feed current through short, thick lines.
	Host sends a break signal after print job (only "?" are printed).	Turn off "framing error ".

12 Technical Data

	GPT-4378 / 4379
Print procedure	Complete fixed thermal print line
Paper / print width/ diameter	Thermal paper: 57.5 ± 0.5mm / 48mm / max. 31 mm/ ca.12m bei 60 g/m2
Resolution	8 dots/mm (203 dpi) , 384 dots/line
Print speed	up to 50 mm/s / 16 lines/s 3mm (24 lines) high
Layout options	Text; graphics, text / data mode; bar code; gray on white; inverted white on black, characters spread in height and width
Character sets, cpl	24 (32, 42, or 54), select by control command or menu
Bar code	Code39, 2 of 5 int, EAN13, EAN8
Serial interface RS232	1,2 to 115,2 KBps
RS232 /TTL interface parameters	Serial RS232 (option TTL) Mode: adjustable through menu: Baud rates: 1200; 2400; 4800; 9600;19200; 38400; 57600; 115200 Data bits: 7, 8; Stop bits: 1, 2; Parity: none, odd, even Handshake: Hardware and X_{ON} / X_{OFF}
Infrared interfaces	GeBE-IR / HP-IR / IrDA
Infrared interface parameters	HP IR Protocol: app. 1,200 baud, only reception GeBE IR Protocol: 9,600 baud or 115200 Baud, 8 data bits, no parity, 1 stop bit, bidirectional protocol IrDA: automatic setting according to IrDA protocol; 9600 or 115200 Baud
Batch files	Text and graphics (logo printing); presettings of parameters through menu
Data compression	(PCL) factor app. 3 :1 (for graphic commands); PC compatible; Windows driver
Batteries, rechargeable	Battery pack 4x NiMH cells, 1,200 mAh; Option for OEM: 2x Li-Ion-battery
Charger for GPT-4378	unregulated plug-in power supply 6V, 500 mA
Charger for GPT-4379	10 - 28VDC, min. 700mA
Batteries / Rechargeable batteries	Option for OEM: 4 x 1.5V Mignon (AA) batteries in battery compartment, connected through spring contacts.
External power supply	GNG-6,5V-1,5A-AC - 6,5V / 1,5A
Max. current during printing	Can be limited by command to max. 0,7A - 6A (adjustment to operating voltage)
Power consumption	Online idle mode: typ. 8 mA; sleep mode: typ.: 200 µA; power off: < 1µA
Environment	0 °C to 50 °C (-10 °C to +60 °C with GeBE HQ paper) 10% to 80% relative humidity, no moisture condensation
MTBF	50 km printed paper (on thermal paper specified by GeBE)
Dimensions in mm	76,8 mm x 77,4 mm x 39,3 mm
Weight	app. 350 g incl. paper roll
Norms	**CE :** See declaration of conformity
Options that require special hardware and special programming	Clock with date and alarm register
	Expanded EEPROM up to 32 KB
	Magnetic car reader with 3 tracks

13 Mechanical Dimensions

75,6

45,6

159,8

89,6

Pocket for GPT-437x-Flash

Options for OEM:
- Custom housing colour, Design foile
- Program versions and special charactr sets
- **Large EEPROM:** up to 32 KByte
- **Magnetic card reader:** up to three tracks simultaneously
- **Clock with alarm:** automatic wake-up
- **Extensions at the SPI-BUS** (keyboard, LC display)
- Paper rewinder
- Low cost external power supply
- Operation with externally charged batteries