

Easy-Load Thermal Printer

GPT-4352

GeBE

Elektronik und
Feinwerktechnik GmbH
Module und Geräte zum Eingeben,
Auswerten, Anzeigen und Ausdrucken ana-
loger und digitaler Daten.

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Operating Manual

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Unpacking

While unpacking, check if all parts on the packing list are present and undamaged. Make sure that all parts delivered are removed from the packaging. Claims for compensation that are based on damage that occurred during shipment can only be asserted, if the delivery service is notified immediately.

Please write a damage report and send it to the supplier, together with the defective part.

Packing Lists for Printer Sets:

Set 1:

- 1x printer:
GPT-4352-LV-82-V.24-LC-at
- 1x transparent LEVER
(exchangeable)
- 1x power cable
GKA-410
- 1x RS-232 interface cable
GKA-406
- 5x paper rolls:
GPR-T01-057-031-007-060A
- 1x operating manual:
SMAN-D-412 or -E-413

Set 2:

- 1x printer:
GPT-4352-LV-82-V.24-EVAL-at
- 1x transparent LEVER
- 1x NiMH battery:
GNA-4,8V-1,2Ah-NiMH
- 1x charger:
GNG-6V-0,5A-U
- 1x connecting cable for charger:
GKA-416
- 1x RS232 interface cable:
GKA-406
- 5x paper rolls:
GPR-T01-057-031-007-060A
- 1x operating manual:
SMAN-D-412 or -E-413

Set 3:

- 1x printer:
GPT-4352-LV-82-SPI-EVAL-at
- 1x transparent LEVER
- 1x Centronics adapter:
GCT-4382-10
- 1x connecting cable:
GKA-407
- 1x power cable:
GKA-410
- 5x paper rolls:
GPR-T01-057-031-007-060A
- 1x operating manual:
SMAN-D-412 or -E-413

Set 4:

- 1x printer:
GPT-4352-LV-82-IR-EVAL-at
- 1x transparent LEVER
- 1x NiMH battery:
GNA-4,8V-1,2Ah-NiMH
- 1x charger:
GNG-6V-0,5A-U
- 1x connecting cable for charger:
GKA-416
- 1x external IR adapter:
GCT-4382-20
- 1x connecting cable to external IR:
GKA-408
- 5x paper rolls:
GPR-T01-057-031-007-060A
- 1x operating manual:
SMAN-D-412 oder -E-413

Safety Information:

Read operating manual before operation!

During installation: Always disconnect the power.

Usage in accordance with the operating manual is required for product warranty. If the user attempts to repair the product, all factory warranties will be null and void.



Errors and changes reserved.

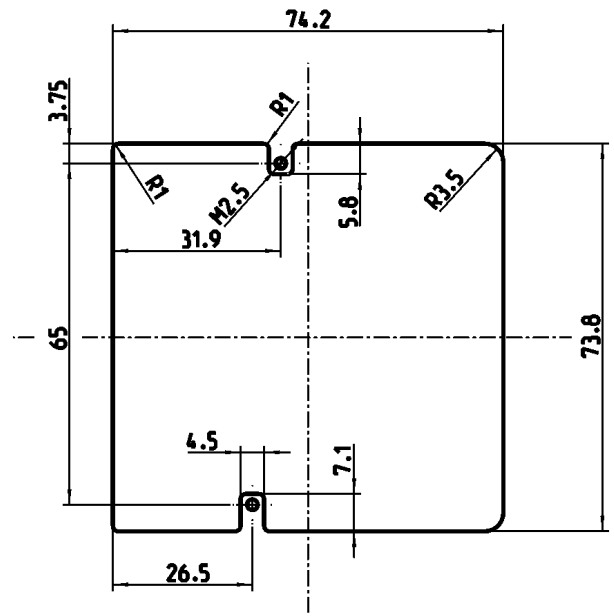
The technical data given is non-committal information and does not represent any assurance of certain features. We reserve the right to carry out alterations that serve the technical progress or change the product insignificantly without advance notice.

Installation in a front panel

The plastic housing of the GPT-4352 printer can be installed with two screws in an easily done cut-out of a front panel with up to 4 mm thickness. The contact surface is flat. The edge of the housing juts out by 1 mm, covering the space between the panel and the housing.

The housing is pushed into the cut-out **from the outside**, and then easily screwed on.

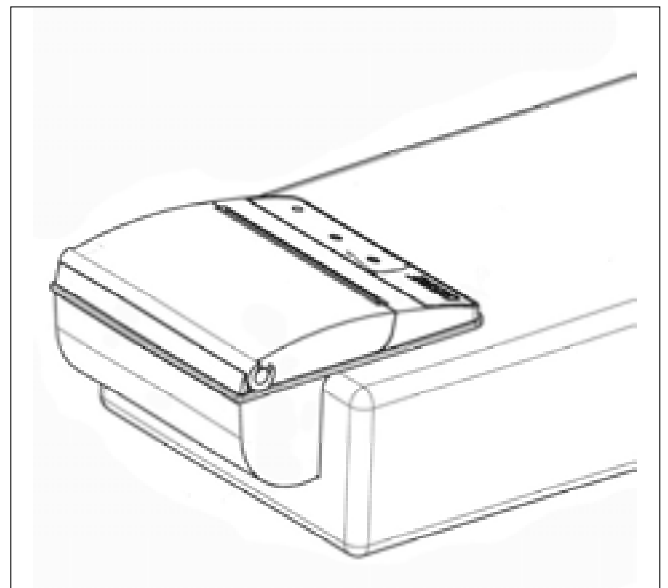
The two holes of 2.8 mm diameter allow the use of M 2.5 screws.



Partial installation in plastic casing

As shown in the picture, the printer housing can also be installed at the edge of a casing. This installation variant has the part of the printer housing that contains the paper roll extending beyond the unit casing. This saves room in the device casing for the installation of other components.

To facilitate installation in different casing shapes, the outer wall of the paper storage was left smooth below the bearing collar. The housing can project about 19 mm from the casing edge, since about half of the paper storage can be used, right up to the slanting slot for inserting the mounting plate.



During installation:

Always disconnect the power !!



Connecting the power supply:

1 The printer can be supplied with fixed voltage from a power supply or a battery. Battery or power supply are plugged into the same connector. Through the voltage supply connection, the printer can be supplied with voltages between 3.5 V (for printers with Centronics adapters with 4.5V) and 7.2 V. The supply for the logic chip is produced on the board. The power cable GKA-410, included in sets 1 and 3, is connected to the connector J4 (3 red wires for + 3.5 -7.2 VDC , 3 black grounding wires, and one white cable for an NTC 6.8 KOhm of a Ni-MH battery). For simple power connections, the white wire remains unconnected. We recommend keeping the length of the line as short as possible. The longer the line, the higher the line resistance, causing bad print quality or even printer failure.

2 **Attention:** Avoid confusing the connection poles, because it can cause immediate damage to the printer. Carefully check the power supply connection before you turn on the printer.

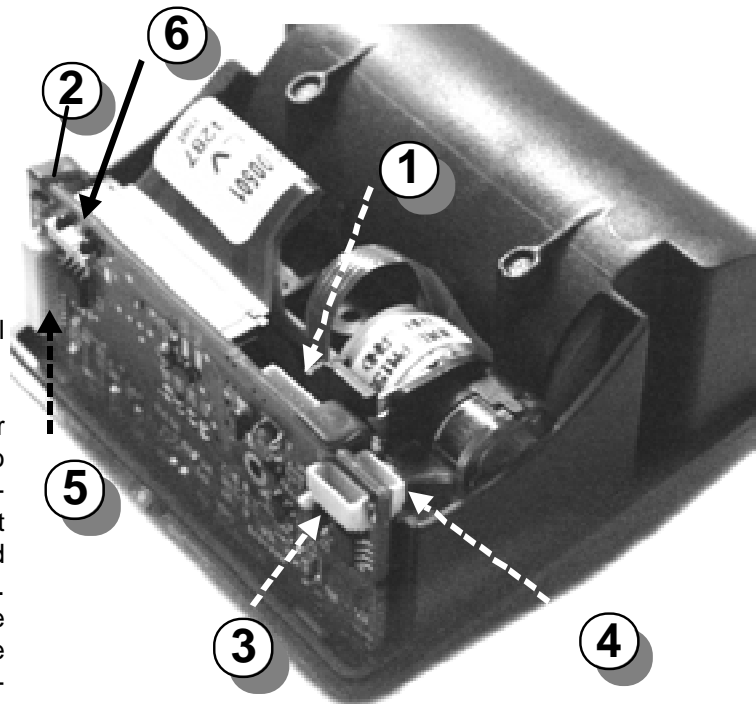
Power down: As a standard, the printer is delivered with the power down mode turned off.

3 The power down mode can be activated by removing the jumper J3 (PWDN). It can also be carried out externally through J8 with PIN 3 and PIN4. on the control panel will display different pulses that show, whether the fast or trickle charging mode is active.

Attention: In power down mode, the printer will sleep after power has been applied.

Connecting the battery charger:

EVAL printers have a standard charging circuit for 4 Ni-MH cells. An operation with 3 or 5 cells is also possible. The charging is performed by the uncontrolled plug-in power supply GNG-6V-0,5A-U that has a special internal resistance. It is connected through the cable GKA-416 to the connector J1. The charging time for a 1200 mA/h battery will be about 5 hours. During the charging process, the LED on the control panel will display different pulses that show, whether the fast or trickle charging mode is active.



ATTENTION !

Never use a fixed-voltage power supply for charging the batteries. The charging circuit is a "simple - switch control", meaning that the current limitation is not done in the charge control of the printer, but in the plug-in power supply.

Please use the suitable GeBE power supply GNG-6.0V-0,5A-U.



4 Serial interface:

Interface cable GKA-406, included in sets 1 and 2, is connected to the connector J2. For RS232 versions, this cable can be directly connected to a PC. A cable with 5 single wires and one open end is available as an option.

5 Parallel interface:

The printer GPT-4352-LV-82-SPI-EVAL can be connected to the Centronics interface adapter GPT-4382-10 using the cable GKA-407.

6 Infrared interface:

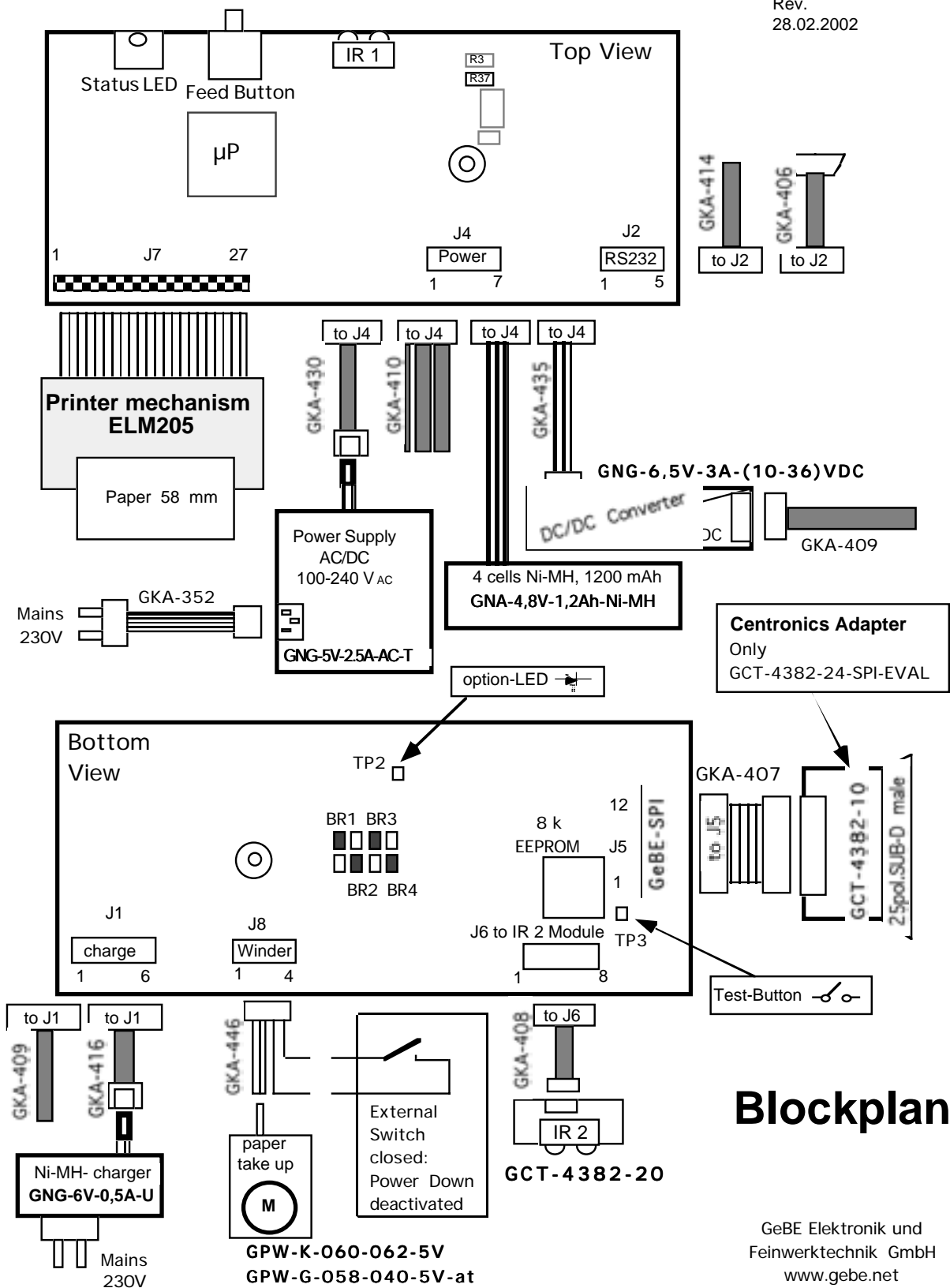
The printer GPT-4352-LV-82-IR-EVAL has an internal IR-tranceiver directly under the red foil window of the control panel. If the infrared interface adapter GCT-4382-20 is connected using the cable GKA-408, the internal tranceiver will automatically turn off.

4 TTL Interface:

On the GPT-4352-LV-82-TTL(4,5V)-EVAL, the RS232 interface driver is not integrated, but the TTL signals of the UART are directly ground through to J2. This enables the connection of opto isolated interface adapters for RS232, RS422/485, and TTY.

Druckercontroller GCT-4382

Rev.
28.02.2002



Serial interface RS232 (V.24) at connector J2

Connector at printer: JST-SH (5pin). >>> Cable: GKA-406: The other end has a 9 pin SUB-D socket. The assignment is 1:1, matching the serial interface of the PC.

Please note that the DSR and the DCD are terminated on some interfaces.

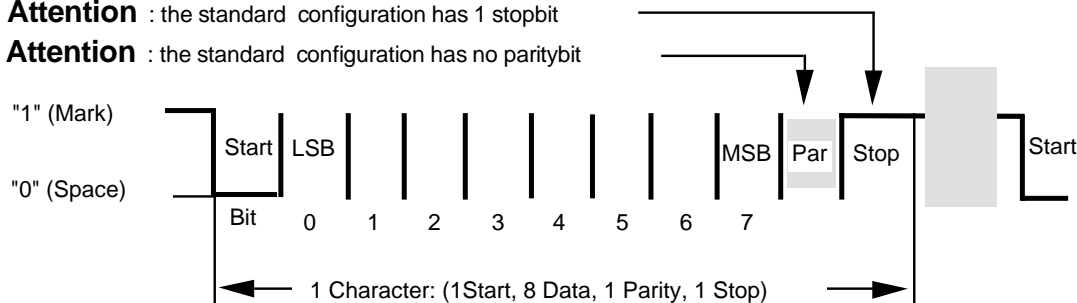
Pin	Signal	Input/Output	Comment	Assignment GKA-406 SUB-D, 9pin
1	GND signal			5
2	TXD	I	Print data	3
3	RXD	O	Error messages and Xon/Xoff messages	2
4	RTS	I	Wakeup-/ handshake input of the controller (standard: no function)	7
select through BR5	+3,0V digital	O	Supply for external adapter	
	+3,0 -7,2V	O	Power supply for external adapter	
5	CTS	O	If the controller can assume data, the level is logical 0	8

1,4,6,9 = NC

Serial Data Format: Standard: 9,600 baud, 8 data, no parity, 1 Stopbit

Attention : the standard configuration has 1 stopbit

Attention : the standard configuration has no paritybit

**Status Messages of the Printer:**

Messages	Serial Interface	Busy	Fault	Select	Paper end	Status LED	Comments
						on:off / flash frequency fast flashing: "S" ca. 0.66Hz medium flashing: "M" ca. 0.33Hz slow flashing: "L" ca. 0.16Hz Y := 0 Y := 1 Y := 2	
Faultless Operation:			1	1	0	LED ein 1:31/ M LED aus	
Reset	"R"		0	0	0		Level on the status lines only short-term during initialization Message: < XON R X(or error)>
Watchdog-Reset	"R"		0	0	0		System failure
End of error	"X"		1	1	0	LED ein 1:31/ M LED aus	Also after hardware, software, and watchdog resets
Buffer empty	X ON						Buffer has been flushed by 22 characters <DC1> = \$11
Buffer full	X OFF	1					Buffer has room for 22 characters more <DC3> = \$13
Synchronous feedback	all Characters						Processing synchronization commands each sent character
Errors:		OK	1	1	0		
Paper end	"P" "p"		1	0	1	1:1 / S 1:1 / S 1:1 / S	
Temp. low	"K" "k"		0	1	0	1:1 / S 1:1 / S 1:1 / S	Print head temperature too low
Temp. high	"T" "t"		0	1	0	1:1 / S 1:1 / S 1:1 / S	Print head temperature too high
Vp too low	"U" "u"		0	1	0	1:1 / S 1:1 / S 1:1 / S	
Vp too high	"M" "m"		0	1	0	1:1 / S 1:1 / S 1:1 / S	
EE-OK	"E0"						EEPROM command completed without errors
EE-invalid	"E1"						invalid standard text no.
EE-Password	"E2"						wrong password for EEPROM-access
EE-Overflow	"E3"						standard-text storage overflow
EE-Time-out	"E4"						EEPROM-Byte time for programming exceeded
battery load							
quick load	"I" "L"					3:1 / L 3:1 / L 3:1 / L	L := start of charge I := end of charge
Erhaltungsladen	"f" "F"					15:1 / L LED on LED on	F := start of charge f := end of charge

Centronics Adapter with SUB-D 25 pin Connector

The cable GKA-407 connects the adapter with the printer (at J5).

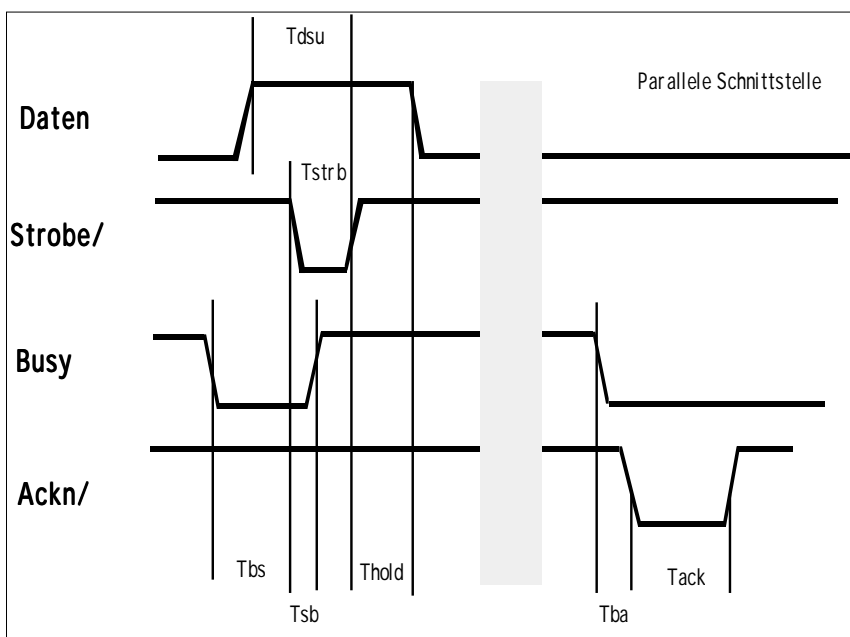
The cable GKA-302 produces a 1:1 connection of the adapter and the parallel port of a PC.

PIN-seizure at the SUB-D 25 of the adapter:

Pin	Signal	Input/Output	Comments
1	Strobe/	I	Accepting data DB0 ..7 with rising edge
2	DB0	I	
3	DB1	I	
4	DB2	I	
5	DB3	I	
6	DB4	I	
7	DB5	I	
8	DB6	I	
9	DB7	I	
10	/Acknowledge	O	
11	BUSY	O	Becomes high with the falling edge of /Strobe
12	Paper End	O	See error messages
13	Select	O	See error messages
14	Auto Line Feed	I	Can be connected with select (Windows operation)
15	/Fault	O	See error messages
16	/Input-Prime	I	used for initiating Reset
17	Select in	I	used for initiating the wake up sequence
18-25	GND digital		

Timing of the Parallel Interface

Time	Name	min(±s)	typ(±s)	max(±s)	Comments
Tack	Ackn.pulse width		17		
T _{ba}	Delay busy ackn.			5,5	
T _{bs}	Busy Setup	0,5			Time before the next strobe
T _{dsu}	Data Setup	0,5			
T _{hold}	Data hold	0,5			With open-collector triggering, the minimum time is 3.5 ±s. This value can be changed by integrating different RC filters.
T _{sb}	delay Strobe-Busy	0,5			
T _{strb}	Strobe pulse width	0,5			



Solder Bridges of the Parallel Interface Module GCT-4382-10

	N a m e	M e a n i n g	C o m m e n t
BR1 oder J3		Return of the AUTO_LF output of the host to SELECT: For a Windows system to report back "printer - SELECT" .	BR1 : standard: open J3 : standard: 2-3 open, auto LF not returned to select
BR2 oder J3		Interrupt SELECT	BR2 : standard: open J3 : standard: 1-2 closed select active

**Configuration through Initialization Text File "TINIT "
(Software Switch)**

All commands for initializing the controller are filed in the text file "TINIT ". TINIT is available in the flash memory of the printer and in the EEPROM (Note: Low-priced controllers with minimal functionality may not have an EE-PROM). An entry in the EEPROM cancels entries in the Flash. For example, if a printer is to print double height and inverse in data mode, the relevant commands are entered in the text file "TINIT". After a RESET, the controller will first carry out its basic initialization, read the solder bridge settings, and then process the commands in the "TINIT". Therefore, the commands in the "TINIT" have final authority regarding the valid settings. Custom settings can also be achieved through entries in the text file "TINIT". If an EEPROM is available, "TINIT" can also be altered through an interface.

The basic initialization of the controller corresponds with the following instructions that are initially not entered in the "TINIT: <ESC> "A"; <ESC> "D" "0"; <ESC> "H" "0"; <ESC> "I" "0"; <ESC> "L" "0"; <ESC> "M" "0"; <ESC> "N" 0 0; <ESC> "P" 1; <ESC> "S"0; <ESC> "W" "0".

In order to change these settings, they have to be added to the "TINIT".

Entries into the "TINIT", which are primarily used

Command (ASCII)	Command (hex)	F u n c t i o n
<ESC> "Y" \$1E	1B 59 1E	Set the blackening of the paper to a medium value of 30.
<ESC> "I" \$40\$18	1B 5D 40 18	Set power consumption to 64 pixels, medium print dynamics and print quality
<ESC> "E" \$05	1B 45 05	Power down after 5 seconds, despite the buffer status, when enable
<ESC> "r" "1"\$32\$FF\$01\$80\$AA\$03\$FF\$01\$80\$23\$03		charging connection configured for 4 NIMH
<ESC> "j" \$9\$A	1B 5B 09 0A	serial data format:9600 Baud,no parity,8 Datenbit,1Stopbit
<ESC> "j" \$0 \$0	1B 5B 00 00	switch on Error output

Solder Bridges Sleep Mode, Baud Rate, Text/Data Mode, Adapter SELECT

There are four 0-Ohm bridges and two jumpers on the controller board (optional) .

These bridges will each be inquired once during RESET.

	N a m e	M e a n i n g	C o m m e n t
R37 or J3	Enable power down	If R37 is not integrated, the controller will be in sleep mode after power-up	Standard: integrated (disable)
BR4	Text/data mode	Data mode: Printout turned by 180°, first line at bottom paper edge	Standard: not integrated (text mode)
BR3	RS232/Centr	Choice, whether the RS232 or the Centronics will be active through SPI (GCT-4382-10)	Standard: not integrated (RS232)
BR1/ BR2	Baudrate	Baud 9600 19200 38400 57600	Standard: not integrated (OFF) Other baud rates on request. Inquired during RESET.
		BR1 OFF OFF ON ON	
		BR2 OFF ON ON OFF	
RN1	Signal and hand-shake lines	TTL levels are integrated for the serial interface	Standard: not integrated
BR5	V ADAPTER select	Pin 4 of the serial interface can either be connected with RTS (handshake input of the controller), with Vcc, or Vp (power supply for external interface adapters)	1-2 closed: Vcc at J2/Pin4 1-3 closed: Vp at J2/Pin4 1-4 RTS at J2/Pin4 (for wake-up with TTL level from version V1.3 on)
BR6	V RS232 select	In idle mode, the power supply of the RS232 driver is either permanently on (app. 3mA), or turns off automatically (app. 300±A). In shut-down, only the input of the RS232 driver remains active. The printer can therefore no longer report its state of readiness during hardware handshake	1-3 closed: permanently on. 1-2 closed: RS232 is turned off during power down mode

Which thermal paper is suitable ?

The printer is specified for a paper width of 57.5 Ø 0.5 mm, with a weight of 60 g/sq m. GeBE is offering suitable paper rolls (GPR-T01-057-031-007-060A) as part of the standard program. Other papers may not be suitable for use.

Thermal papers that are resistant against water, grease, or alcohol are available for special applications. We will gladly assist you in your selection of the suitable thermal paper.

Which side of the thermal paper can be printed on?

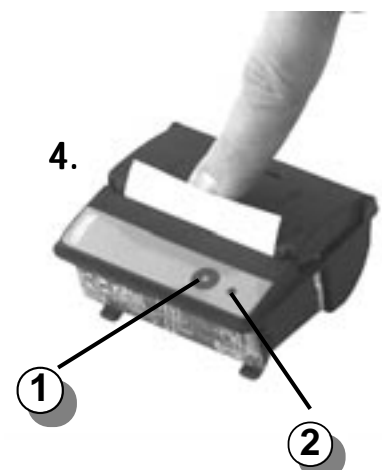
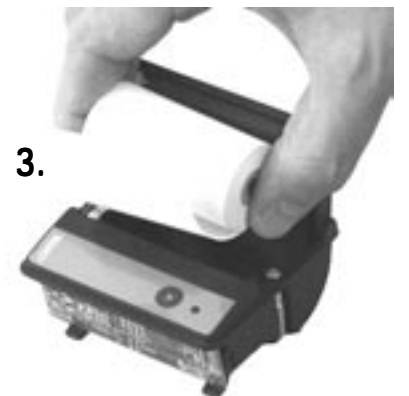
On the paper roll, the side to print on is, in almost all cases, the outside. If you should have any doubts, just do the fingernail test: Quickly drive the edge of a fingernail with slight pressure over the paper. The thermosensitive side will turn black as a result of the frictional heat.

How do I insert the paper?

Use paper rolls that are coated on the outside with a width of 57.5 mm Ø 0,5mm and a winding diameter of 31 mm.

Standard: GPR-T01-057-031-007-060A

1. Unwind about 10 cm (4 ") of paper from the roll. Keep the layers wound tightly.
2. Open the printer cover by slightly pressing the LEVER in the cover upwards. The print roll is lifted from the mechanism together with the cover. The cover is now easy to open.
3. Insert the paper roll in the paper storage, so the outside shows toward the printer mechanism. Only this outside can be printed on.
4. Close the cover by applying strong pressure. You can hear it snap shut. Now you can rip off paper at the tear bar without the cover opening up or the paper sliding through the print head.



The control elements of the printer:

- ① Paper feed button:** This button wakes up the printer from the sleep mode and feeds the paper.

Self test: Before connecting the printer to the host (PC), the functions of the printer can be tested by doing a self test. Keep the paper feed button pressed while turning on the power supply. When the feed button is released, the self test will begin. This test will only check the functions of the inner circuit, not the interfaces.


- ② Status LED:** This LED shows the status of the printer during operation and - if it is equipped with a charging circuit and a battery - the charging status of the battery during the charging process.
See also "Messages of the Printer".

Not every error is a printer error.

You will save time and money by clearing simple errors yourself.

The following hints might help you:

Symptom	Cause	Remedy
The printer seems to print, but there is no blackening	Wrong side of paper against the print head	Insert paper correctly
At the start of printing, the LED goes out shortly.	The power supply is not laid out and/or connected optimally	Use a sufficiently proportioned power supply and short lines. Check all plug-in connections for transfer resistances. Since high peak currents occur with thermal printers, even the smallest transfer resistances result in excessive voltage drops. In this case, no power supply would be strong enough. Buffering with capacitors is possible, if the power supply is only slightly too weak, and large capacitors (e.g. 4700±F) are used.
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. When I enter more, it won't print at all.		
The print-out is incomplete after a few characters.	The printer buffer is "over-run" (256 bytes), so data is getting lost.	Solution: Check or start using handshake. (software: XON/XOFF, or hardware: CTS). If necessary, lower output speed, e.g. down to 1.200 baud. See manual MAN-D-400, "Interface Settings".
The printer prints incorrect characters.	RS232 instead of TTL interface or the other way around. (characters of the upper area are printed).	Use correct interface.
	Wrong baud rate was selected. (a lot of "?" are printed).	Set baud rate through solder bridges or TINIT.
	Bad ground connection on the printer. If the printer is not grounded correctly, a part of the printing current will flow through the interface, causing a voltage rise and therefore, a data falsification.	Check and improve ground connection; supply power through short, thick lines.
	Host sends a break signal after printjob (only "?" are printed).	Turn off "framing error ". See manual MAN-D-400, "Interface Settings".
Centronics printer works with a PC, but not with my machine.	Printer electrically not compatible with host.	Measure line levels. Contact GeBE for adjustment.
The described command does not work.	Parameter were e.g. set in ASCII values instead of binary values.	Reset parameters.

ArticleNo	Nomenclature	Interface					Memory	Akku					
		RS-232	TTL	Infrared on board and connector	SPI (for Centronics adapter)	SPI (for clock and RS232)		NiMH charging circuit	NiMH charging circuit				
													
11292	GPT-4352-LV-82-24-V.24-at	X					X			X		X	X
11335	GPT-4352-LV-82-24-V.24-EVAL-at	X				X	X	X	X	X	X	X	X
11382	GPT-4352-LV-82-24-SPI-EVAL-at				X		X	X	X	X	X	X	X
11336	GPT-4352-LV-82-24-IR-EVAL-at			X		X	X	X	X	X	X	X	X
11561	GPT-4352-LV-82-24-TTL(4,5V)-EVAL-at		X			X	X	X	X	X	X	X	X

Options:

Serial EEPROM for stored print files

- 16, 32, or 64 KByte EEPROM for LOGO download

Interface adapters:

- Centronics (for GPT-4352-LV-82-24-SPI-EVAL-at) : GCT-4382-10
- Infrared (for GPT-4352-LV-82-24-IR-EVAL-at) : GCT-4382-20
- Clock and 2nd RS-232 (for GPT-4352-LV-82-24-EVAL) : GCT-4382-30

Accessories:

Mounting frames

- 3HU front for 19" racks ,18DU width : GMS-4352-3HE-18TE
- 96x96 front for DIN housings : GMS-4352-96x96

Paper:

GeBE offers standard paper rolls with outside coating
(60 g/sq m)

- Thermal paper standard; 5 years : GPR-T01-057-031-007-060A ex stock
- Thermal paper standard; 15 years : GPR-T11-057-031-007-060A on request
- Thermal paper standard; 99 years : GPR-T21-057-031-007-060A on request
- Thermal paper; two-ply : GPR-T02-057-031-012-120A on request
- Thermal paper; adhesive : GPR-T04-057-031-012-120A on request
- Thermal paper; low sensitivity : GPR-T13-057-031-000-060I on request

Power supplies and charging devices:

- Desk power supply (5V, 2.5A): (for printers w/o battery) : GNG-5V-2.5A-T
- Plug-in power supply: (for printers with 4 Ni-MH battery cells) : GNG-6.0V-0,5A-U

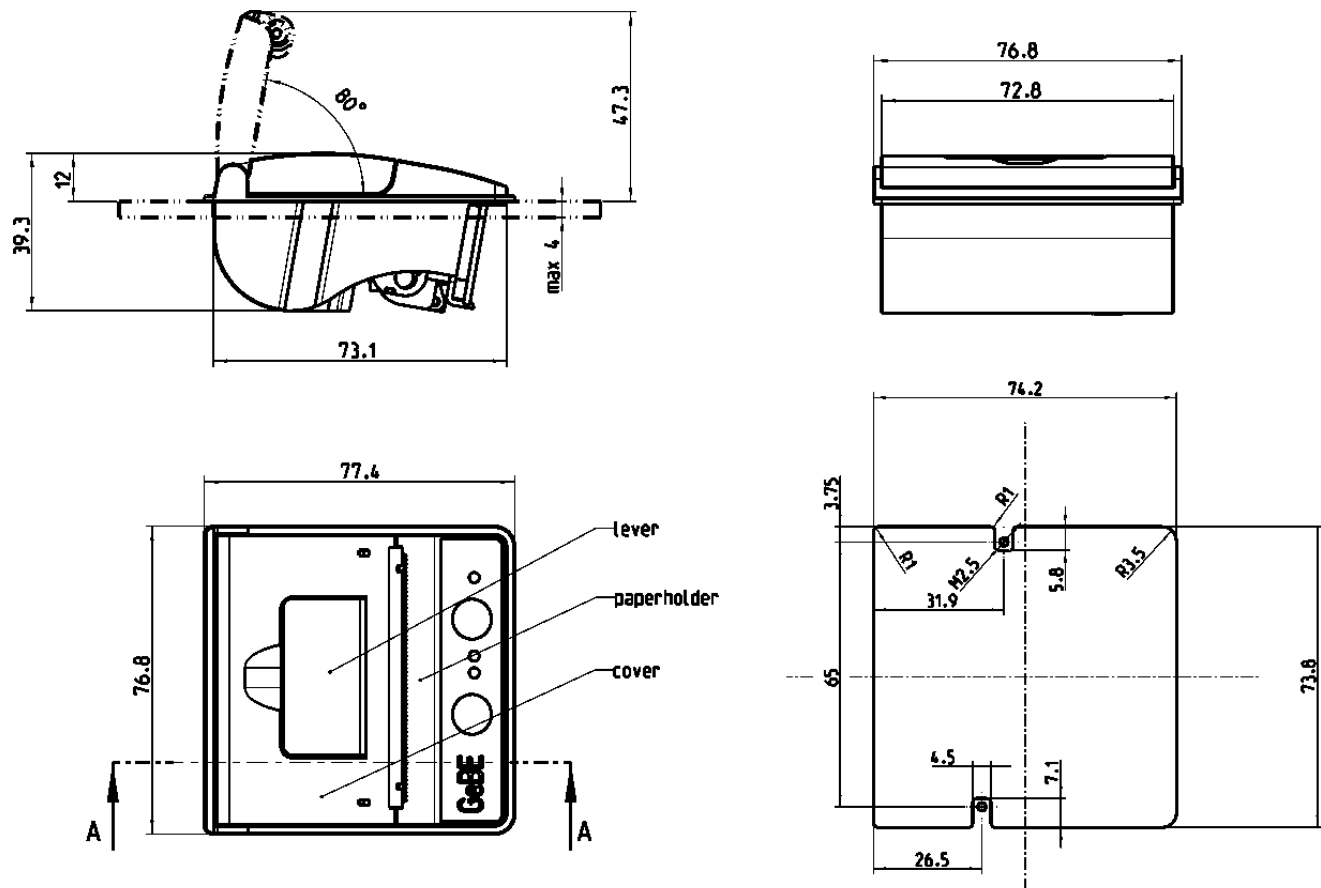
Batteries:

- 4 cells Ni-MH 1200 mAh : GNA-4,8-1,2-Ni-MH
- 1 cell Li-Ion 800 mAh : GNA-3,6-0,8-Li-Ion (on request)

Cables:

- power supply: ST(7pins) 250 mm, open end : GKA-410
- RS232 ST(5 pins) 1000 mm to PC ST(SUB-D, 9 pin socket) : GKA-406
- TTL: ST(5pins), 500 mm, open end : GKA-414
- charging supply, ST(6pins) 190 mm to charging socket : GKA-416
- SPI-bus: ST(12pins) 250 mm to Centronics adapter ST(12pins) : GKA-407
- Cable ST(4pins), rewinder, external power down active/inactive : GKA-446

Housing Dimensions:



Important Technical Data

	GPT-4352-...-V.24 / IR	GPT-4352-...-TTL / SPI
Print technique	Fixed thermal print line	
Paper - / printing width	57,5 Ø 0,5 mm / 48 mm	
Resolution	8 dots / mm , 384 dots / line	
Print speed	up to 50 mm/s	
Voltage supply	(3,0) 3,3 - 7,2 V	4,5 - 7,2 V
Batteries	4 (3 or 5 on request) NiMH cells. Optional: charging circuit for 1 Li-Ion cell (3.6V)	
Current max. sleep mode	< ca. 1 ±A or 150±A / with infrared interface	
Current max. idle:	app. 3 mA , depending on components	
Current max. printing	Adjustable by command to max. 0.7 A - 6 A, depending on operating voltage	
Serial interfaces	RS232 up to 57.6 kbps Optional infrared on board or with external adapter	Serial through TTL, opto isolated RS232, TTY, RS422, and RS485 through TTL adapter ; parallel through SPI/Centronics adapter, USB, and RS232 through adapter
Interfaces	Baud rates:1,200; 2,400; 4,800; 9,600; 19,200; 38,400; 57,600 Mode: adjustable: 7, 8 data bits, 1,2 stop bits , none, odd, even parity Handshake: hardware handshake and XON / XOFF	
Data compression	Factor app. 3 :1 (for graphic commands); PC compatible; Windows driver	
Character sets, cpl	24 (32, 42, or 54) selectable by control command	
Bar code	Code39, 2 out of 5 int, EAN13, EAN 8	
Environment	0 °C to 50 °C (-10 °C to +60 °C with GeBE HQ paper) 10% to 80% rel. humidity, no moisture condensation	
MTBF	50 km printed paper (using specified thermal paper)	
Dimensions in mm	76.8 mm x 77.4 mm x 39.3 mm / installation depth: 27 mm	
Roll diameter	max. 31 mm/app. 12m bei 60 g/sq m	
Weight	125 g with paper roll	
Housing material	ABS (different colors possible)	
Norms	CE : see declaration of conformity	

Further information on the Internet: www.oem-printer.com

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