Housing Dimesions:

	GPT-4352-V.24	GPT-4352-TTL
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
	Optional: charging circuit for one Li-Ion cell (3.6V) ,or for 3,4 , or 5 NiMH cells	
Current max. sleep mode	app. 0 ±A or 150±A /infrared	
Current max. idle:	app. 3 mA depending on components	
Current max. printing app	Adjustable to max. 0.7 A - 6 A according to voltage	
Interfaces	RS232 up to 57.6 kbps Optional: Infrared on board or with external adapter	TTI through SPI: Centronics, USB (in preparation), throughTTL: RS422/485, TTY
Interfaces	Baud rates:1,200; 2,400; 4,800; ,600; 19,200; 38,400; 57,600 Mode: adjustable: 7.8 data bits, 1.2 stop bit , none, odd, even parity Handshake:hardware handshake and XON / XOFF	
Data Compression	Factor app. 3 :1 (for graphic commands); PC-compatible; Windows driver	
Characters, cpl	24, 32, 42, and 54	
Bar Code	Code39, 2 out of 5 int, EAN13, EAN 8	
Environment	0 °C to 50 °C (-10 °C to +60 °C with GeBE HQpaper) 10% to 80% rel. humidity, no moisture condensation	
MTBF	50 km printed paper	
Dimensions in mm	76.8 mm x 77.4 mm x 39.3 mm / installation depth: 27 mm	
Roll Diameter	max. 31 mm	
Weight	150 g incl. paper roll	
Housing Material	ABS	
Norms	**CE :** see conformity declaration	

Protocol Printer

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

GPT-4352

GeBE Document No.:
SMAN-E-413

English: SMan-D-412

Operating Manual

Unpacking

While unpacking check if all parts on the packing list are present and undamaged.
Make sure that all darts delivered are removed from the packaging.
Claims for compensation that are based on damage that occured during shipment can
only be asserted, if delivery service the is notified immediately.
Please write a damage report and send it to the supplier together with the defective part

Packing list for printer sets:

Set 1:
1x printer: GPT-4382-LV-82-V.24-at
1x power supply cable: GKA-410
1x RS232 interface cable: KA-406
5x paper rolls: GPR-T01-057-031-007-060A

Set 2:
1x printer: GPT-4382-LV-82-V.24-EVAL-at
1x NiMh battery: GNA-4.8V-1.2Ah-NiMH
1x charger: :GNG-6V-0,5A-U
1x connection cable for charger: GKA-416
1x RS232 interface cable: KA-406
5x paper rolls: GPR-T01-057-031-007-060A

Set 3:
1x printer: GPT-4382-LV-82-TTL-EVAL-at
1x Centronics adapter: GCT-4382-10
1x connection cable: GKA-407
1x power supply cable: GKA-410
5x paper rolls: GPR-T01-057-031-007-060A

Safety Information:

⚠ **Attention**

Read operating manual carefully before operation.
During installation: Always disconnect the power.
Usage in accordance with the operation manual 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.

Article No.	Controller for ELM-205-LV	Interface					Memory		Batt.		Features			
		RS-232	TTL	Infrared	SPI (for Centronics)	SPI (Time/ Date)	8 kByte EEPROM	16 kByte EEPROM	Li-Ion Charging Circuit	NiMH Charging Circuit	Power Down	Rewinder	CPL: 24, 42, 54, 32	Color: Anthracite RAL7016
11292	GPT-4352-LV-82-24-V.24-sw	X									X		X	X
11335	GPT-4352-LV-82-24-V.24-EVAL-sw	X				X	X			X	X	X	X	X
11382	GPT-4352-LV-82-24-TTI-EVAL-sw		X		X	X	X			X	X	X	X	X
11336	GPT-4352-LV-82-24-IR-EVAL-sw			X		X	X			X	X	X	X	X

Options:
- 16,32 or 64 kByte EEPROM for LOGO download

- Centronics (with GPT-4352-LV-82-24-TTL-EVAL-at)   : GCT-4382-10
- Infra red (with GPT-4352-LV-82-24-IR-EVAL-at)   : GCT-4382-20
- Time / Date / 2nd. RS232 (with GPT-4352-LV-82-24-EVAL) : GCT-4382-30

Accessories:

Mounting Frames
- 3HU front for19" Racks ,18TE width : GMS-4352-3HE-18TE
- 96x96 front for DIN housings   : GMS-4352-96x96

Paper:
GeBE is offering 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-T02-057-031-007-100A *on request*
- Thermal paper; adhesive   : GPR-Tx1-057-031-007-110A *on request*
- Thermal paper; low sensibility   : GPR-Tx1-057-031-007-060A *on request*

Power supply and charging devices:
- desk power supply (7V)   : GNG-7V-3A-T
- plug-in power supply for 4 Ni-MH cells : GNG-6.0V-0,5A-U

Batteries:
- 4 cells Ni-MH 1200 mAh   : GNA-4,8-1,2-Ni-MH
- 1 cells Li-Ion 800 mAh   : GNA-3,6-0,8-Li-Ion

Cables:
- power supply; 7 wires; 250 mm   : GKA-410
- RS232 1:1 SuB-D 9 pin; 1000 mm : GKA-406
- TTI, 5 wires; 500 mm   : GKA-414
- charging supply; 190 mm   : GKA-416
- SPI-Bus (Centronics); 250 mm   : GKA-407

Not every error is a printer error.
You will save time and money by clearing simple errors yourself.
The following tips are supposed to help you with that:
Following hints might help you:

| Symptom	Cause	Remedy
The print seems to print, but there is no blackening	Paper inserted wrong	Insert paper correctly
At the start of printing, the LED goes out shortly	The power supply is not optimal.	Use a suitable power supply and short lines. Check all plug-in connections for trasfer 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 are used (e.g. 4,700 ±F) .
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 "run over" (256 bytes), so data are getting lost .	Solution: Check or start using handshake. (XON/XOFF, or hardware). If necessary, lower output speed, e.g. go down to 1,200 baud. See MAN-D-400, "Interface Settings"
The printer prints wrong characters.	RS232 instead of TTL interace or reverse. (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 of the printer. If the printer is not grounded right, a part of the printing current will flow through the interface, causing a voltage riseand therefore, a data falsification.	Repair ground connection.
	Host sends a break signal after print job (printing only "?")	Turn off "framing error ". See MAN-D-400 "Interface Settings"
My Centronics printer works with a PC, but not with my machine.	Printer is electronically not compatiblewith host.	Measure level of the line that is reporting the error. GeBE can adjust this.

Installation in a Front Panel
The housing of the GPT-4352 printer can be installed with two screws in a cut-out that is easy to make. The contact surface is flat.
The edge of the housing juts out, covering the space between panel and housing.
The housing is pushed from the outside into the cut-out, and then easily screwed to two fish-plates in the cut-out.
Two holes of 2.8 mm diameter allow the use of M 2.5 screws.
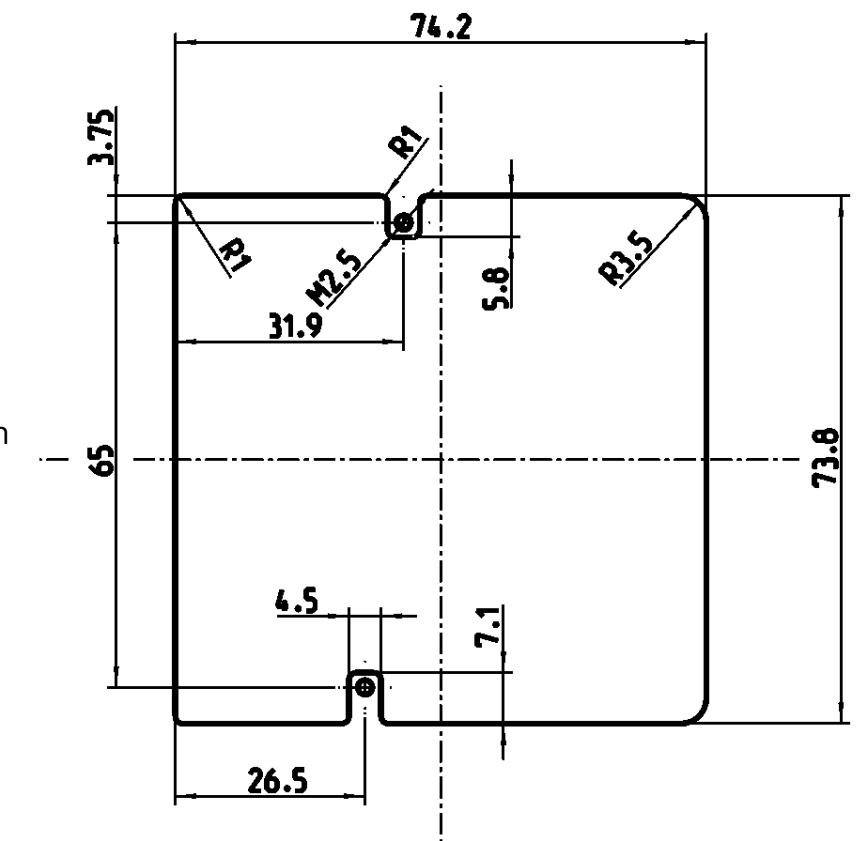
Partial installation in a plastic casing

As shown in the picture, the printer housing can also be installed at the edge of the device 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.

Since the shapes of casings will vary, the design provides no additional cover for installation underneath the bearing edge. Therefore, a clean cut-out on the side of the casing needs to be made in accordance with the unit design.The outer wall of the paper storage can be used up to the slanting slot for the fish-plate, allowing the housing to project about 17 mm, or including the edge, approx. 19 mm.

During installation:

Always disconnect the power.

Attention
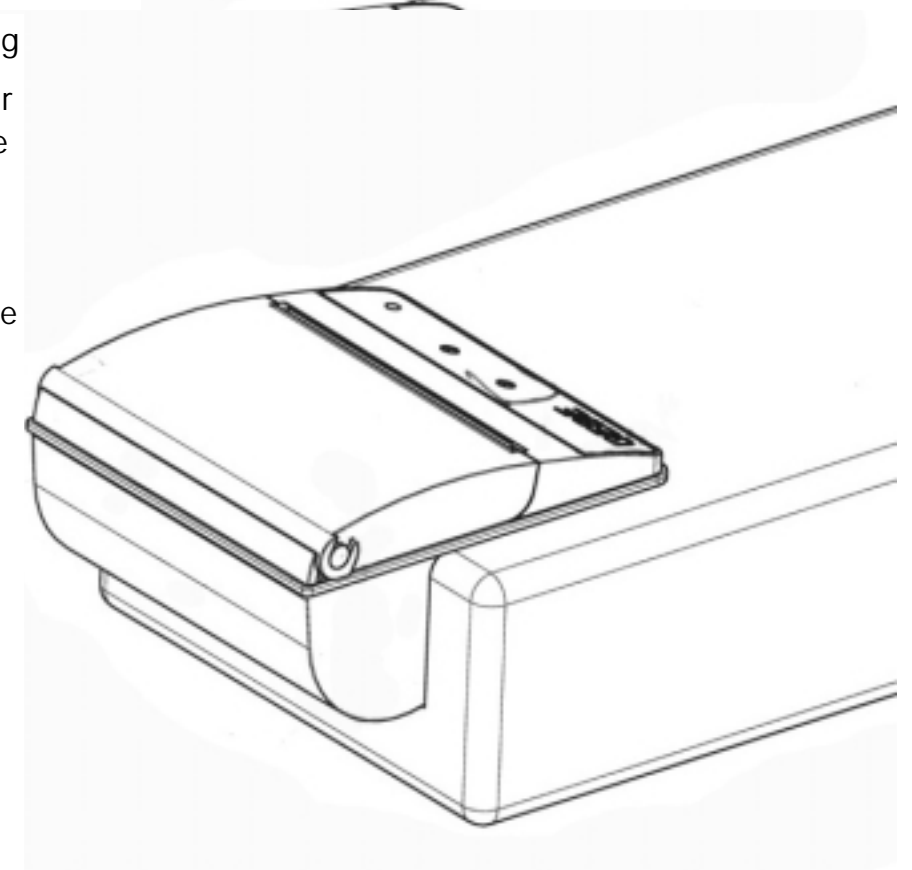
① Connecting the Power Supply:
The printer can be supplied with fixed voltage from a power supply or from a battery. Battery or power supply are plugged into the same connector. Through the voltage supply connection, the printer can be supplied with voltages between 3.5 V and 7.2 V. The supply of the logic chip is produced on the board.The power supply cable GKA-406, included in all sets, is connected to connector J4. (3 red wires for + 3.5 -7.2 VDC , 3 black grounding cables, and 1 white cable for a NTC 6.8 KOhm of a NI-MHbattery) . The white wire has no function with Li-Ion batteries or power supply . We recommend to keep the length of the line as short as possible. A line that is too long can cause bad print quality, or even printer failure.

Attention: Avoid confusing the poles of the connections, because it would cause immediate damage to the printer.. Carefully check the connections of the power supply after the wiring is done, before you turn on the power.

② Power Down: As a standard, the printer is supplied with the power down mode turned off. The power down mode can be activated by removing resistor R37 or jumper J3 (PWDN) .
Attention :In the power down mode, the printer will sleep even when the power has been applied.

③ Connecting the Battery Charger:
EVAL printers have a battery charging circuit for one Li-Ion battery (3.6 V), or for 3, 4, or 5 Ni-MH cells. For the charging, you only need an uncontrolled plug-in power supply GNG-6V-0,5A-U.The charger is connected to the connector J1 and through the cable GKA-409. The maximum charging current depends on the battery voltage (app. 0.7-0.3 A). The charging time for a 1200 mA/h battery will be app. 4 - 5 hours. During the charging process, the operation LED will display the charging status. Fast charging and trickle charging will be displayed.

ATTENTION !
Never use a fixed-voltage power supply for charging the batteries The charging circuit is a "simple - switch" control, meaning that the current limiting is not done in the charging control of the printer, but in the plug-in power supply. Use the suitable GeBE power supply or call us for information.
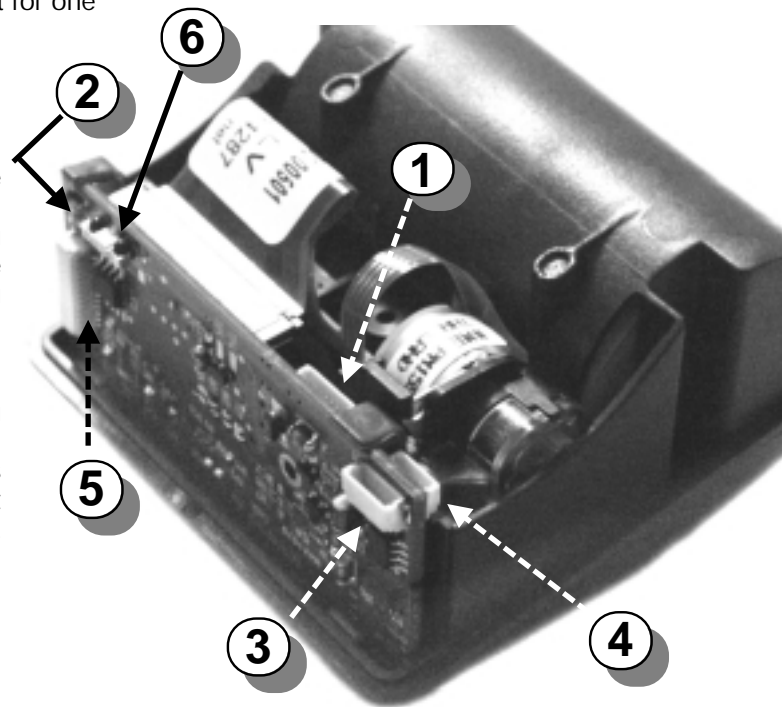
④ Serial Interface:
The interface cable GKA-410 that is included in all sets is connected to the connector J2. With RS232 versions, this cable can be connected directly to a PC. A cable with 5 single wires and one open end is available as an option.

⑤ Parallel Interface:
The printer type GPT-4352-LV-82-TTL-EVAL can be connected to the Centronics interface adapter GCT-4382-10 through the cable GKA-407.

⑥ Infrared Interface
The type GPT-4352-LV-82-IR-EVAL has an IR-tranceiver mounted directly under the foil of the control panel. If the infrared interface adapter GCT-4382-20 is connected through the cable GKA-408, the internal tranceiver will switch off.

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 a suitable paper roll as part of the standard program (-GPR-T01-057-031-007-060A). Other papers may cause trouble. Thermal papers that are resistent 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 outside is always the side to print on. If you should have any doubts, just do the finger nail test. The thermosensitive side will turn black under the pressure of a sharp object..

How do I Insert the Paper ?
Use paper rolls with the paper coated on the outside, 57 mm Ø 0.5mm with a winding diameter of 31 mm.
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 up. The print roll gets lifted from the mechanism together with the cover. The cover can now be opened easily.
3. Insert the paper roll in the paper *supply,* so the outside shows toward the printer mechanism. Only the outside is printable.
4. Close the cover by applying strong pressure. You will be able to hear it snap shut. Now, you can rip off the paper at the tear bar without the cover opening again and the paper sliding back into the printer.

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 a connection between printer and host (PC) is established, the function of the printer can be tested by starting 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. The test will only check the functions of the inner circuit, but not the interface.
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 "Messages of the Printer".

Configuration through Initialization Text File "TINIT "   (Software DIL 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 also in the optional EEPROM. An entry in the EEPROM cancels the entries in the flash. For example, if the 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 process these commands. Additional different settings can be entered in the "TINIT" at the factory. If the optional EEPROM is available, TINIT can be changed through the interface. A reset will first activate the standard settings, read the solder bridge settings, and then process TINIT. The default setting of the controller corresponds with the following instructions that are 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.

Standard Entries in the TINIT

Command (ASCII)	Command (hex)	Function
<ESC> "Y" $1E	1B 59 1E	Set the blackening og the paper to a medium value of 30.
<ESC> "[" $40$18	1B 5D 40 18	Set power consumption to 64 pixels, medium print dynamic and quality
<ESC> "E" $05	1B 45 05	Power down after 5 seconds, regardless the Buffer Status, if enabeled
<ESC> "r" "1"32FF$01$80AA03FF01$80$23$03		charging circuit confugured for 4 Ni-Mh
<ESC> "]" $09$0A	1B 5B 09 0A	Interface : 9600,n,8,1
<ESC> "]" $00 $00	1B 5B 00 00	error messageing activ

Lötbrücken   Baudrate, Text-/Datenmode

Auf dem Kontroller befinden sich vier 0 Ohm Brücken und zwei Jumper (Optional) .
Diese Brücken werden jeweils einmal bei RESET abgefragt.

S1/	Name	Meaning					Comments
R37 or J3	Enable Power Down	If the resistor is not assembled the controller is after Power up in sleep mode					Standard:assembled (disable) only with Power do
BR4	Text/data mode	Data mode: Printout turned by 180°, first line at bottom edge					Standard: not assembled (text mode)
BR3	RS232/Centr	Choice, whether RS232 or Centronics (GCT4382-10 on SPI) should be active.					Standard: not assembled (RS232)
BR1/ BR2 or J3	Baud rate	Baud	**9600**	19200	38400	57600	Standard: not assembled (OFF) Other baud rates on request. Each inquired once during RE-SET.
		BR1	OFF	OFF	ON	ON	
		BR2	OFF	ON	ON	OFF	
RN1	Signal- and Hand-shake lines	Assembled with TTL levels for serial interface					Standard: not assembled
BR5	V ADAPTER Select	Pin 4 of the serial interface can either be supplied with RTS (Host handshake of RS232 , in standard no function), Vcc or VP					1-2 closed: Vcc to J2/Pin4 1-3 closed: Vp to J2/Pin4 **1-4 RTS to J2/Pin4 (wake up for TTL controller, up from version v1.3)**
BR6	V RS232 Select	The power supply of the RS232 driver is permanent connected in power save mode.If closed, the driver will go in shut down after printing (ca. 300±A). In Shut down only the driver input is aktiv. This means that the Handshake signal will not give a "printer ready" signal.					**1-2 closed: permanet.** 2-3 closed: RS232 shutdown enabled

Lotbrücken des parallelen Schnittstellenmoduls GCT-4382-10

	Name	Meaning	Comment
BR1 oder J3		Return of AUTO_LF exit of the host to SELECT: With this, a Windows System can report back SELECT.	BR1 : Standard: open J3 : Standard: 2-3 open, no loop from Auto LF to Select signal
BR2 oder J3		SELECT interrupt	BR2 : Standard: offen J3 : Standard: 1-2 closed, Select activ

Blockplan 4382

Rev.
10.10.2001

Top View

Bottom View
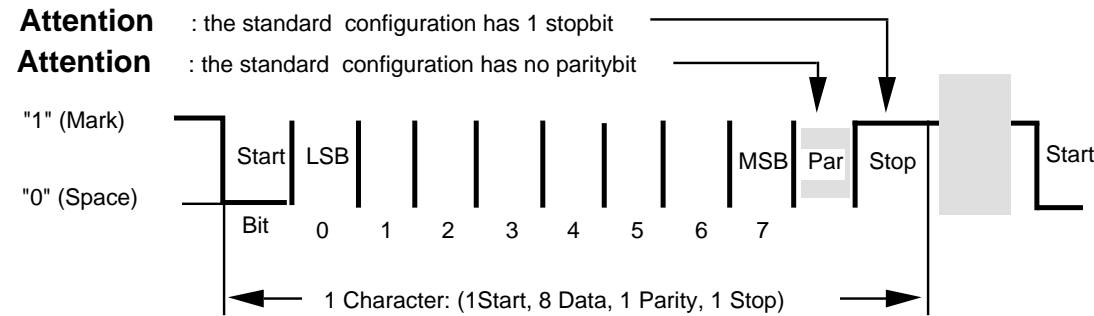
Centronics Adapter

GCT-4382-10
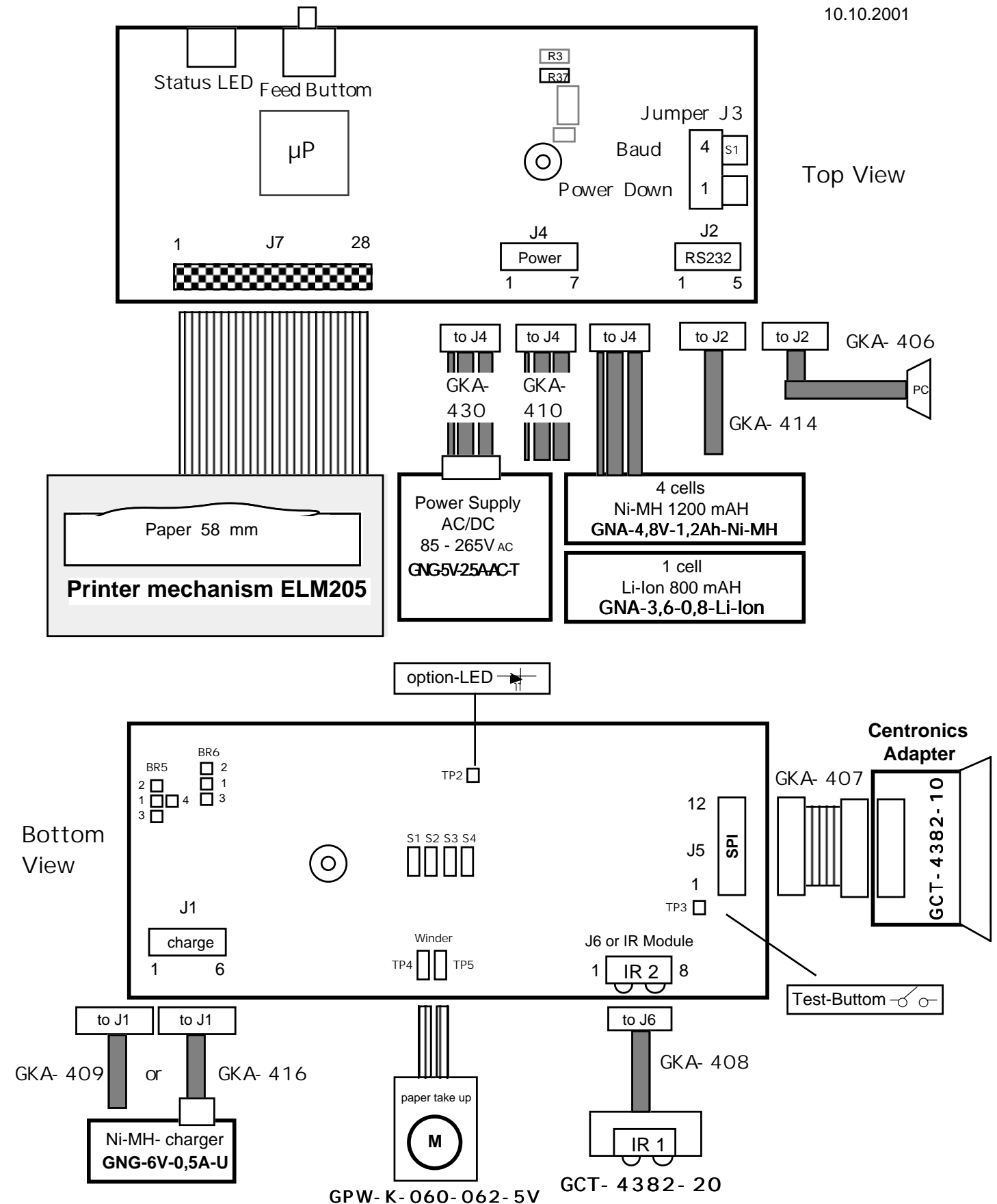
Serial Interface RS232   Standard Setting: 9600, n, 8,1

Connector: JST-SH at the printer.

GKA-406: SuB-D 9 pin socket with a1:1 assignment to the PC, no 0-modem circuit.

Pin	Signal	Input/ Output	Comment	Assignment GKA-406 D-SUB 9pin
1	GND signal			5
2	TXD	I	Print data	3
3	RXD	O	Error messages and Xon/Xoff messages	2
4	RTS	I	Wake-up / Handshake input of the controller (standard:without function)	
Aus-wahl-über BR5	+3,0V digital	O	Supply for external adapter	7
	+3,0 -7,2V Power	O	Supply for external adapter	
5	CTS	O	When the controller can receive data, the level will be logic 0	8
				1,4,6,9 NC

Attention : the standard configuration has 1 stopbit

Attention : the standard configuration has no paritybit

"1" (Mark)

"0" (Space)

Start | LSB | | | | | | | MSB | Par | Stop | | Start

Bit   0   1   2   3   4   5   6   7

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

Status Messages of the Printer:.

Messages	Serial Interface	Busy	/Fault	Select	Paperend	Status LED 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	Comments
Faultless operation:		1	1	0	LED on	1:31/ M	LED off		
Reset	"R"	0	0	0				Level on the status lines only short-term during phase of initialization Message: < XON R X (or error)>
Watchdog reset	"R"	0	0	0				After system failure
End of error	"X"	1	1	0	LED on	1:31/ M	LED off	Also after reset, software, and watchdog resets
Buffer empty	X ON							Buffer emptied by 22 characters <DC1> = $11
Puffer full	X OFF	1						Space for 22 more characters in buffer <DC3> =$13
Synchronous feedback	all characters							Processing synchronization commands each sent character
E r r o r s :		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 error-free
EE-invalid	"E1"							Invalid text file no.
EE-password	"E2"							Wrong password for EEPROM access
EE-overflow	"E3"							Text file memory overflow
EE-time out	"E4"							EEPROM byte programming time exceeded
chargeing								
Fast charge	"I"	"L"				3:1 / L	3:1 / L	3:1 / L	L := charge start I := charge end
Trickle charge	"f"	"F"				15:1 / L	LED on	LED on	F := charge start f := charge end

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Centronics Adapter with SUB-D 25 pin connector

The cable GKA-407 is used to connect the adapter and the printer.

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

Pin	Signal	Input/Output	Comment
1	Strobe/	I	Accepting data DB0 ..7 WITH THE 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	to be connectet with Select in Windows Mode
15	/Fault	O	See error messages
16	/Input-Prime	I	
17	Select In	I	wake up signal (see power down)
18-25	GND digital		

Time	Name	min(±s)	typ(±s)	max(±s)	Comment
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 to other values by assembling the RC filters alternatively.
T_{sb}	delay strobe-busy	0,5			
T_{strb}	Strobe pulse width	0,5			

Daten

Strobe/

Busy

Ackn/

Parallele Schnittstelle