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DCS & Labelling Worldwide



EXCELLENT PRINTING PERFORMANCE MB400



Quick Guide



DCS & Labelling Worldwide

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Warning : This equipment complies with the requirements in Part 15 of FCC rules for a Class A computing device. Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception requiring the operator to take whatever steps necessary to correct the interference.

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SAP/MB400/QG/Jan05/02

MB400 Quick Guide

Pg 20

Options

Battery Pack

Used when the printer is carried

Battery Charger

The battery packs are recharged on this.

AC Adapter for Printer

Use the adapter to supply power from a household electrical outlet (AC 100V). Connect the DC output jack of the adapter to the printer.

RS232C Cable

For connection of computers and handy terminals.

Weak Radio Unit

For communication with specified handy terminals.

Battery Charger Set

Battery charger enables the recharging of the maximum of 4 batteries at the same time, with one AC adapter.

SAP/MB400/QG/Jan05/02

Item	Details
Label Sensor	Opaque sensor / Dispense sensor
Font	SATO standard font: x 21, x 22, x 23 Kanji 16 x 16, 24 x 24 Kaku Gothic / Mincho (JIS First Second standard)
Barcode	JAN8/13, UPC-E/UPC-A, NW-7, CODE39, INTERLEAVED 2 of 5, CODE 128, CODE 93, Customer Bar Code
Two Dimension Code	PDF 417, QR code
Function Key	POWER key, PRINT key, FEED key
LED	STATUS, BATTERY (Red / Orange / Green)
Noise Gauge	Noise radiation: VCCI - B Static withstanding pressure: Level 2
Protection Function	Suspension of action upon detection of low batteries
Environment Conditions (including battery)	Operation temperature: 0 - 50°C Humidity: 25-80% (without condensation) Storage Temperature: -10 - 60°C Humidity: 25-80% (without condensation)
Option	AC Adapter, Battery charger, Battery pack, RS-232C cable

PRINTER OVERVIEW

The SATO MB400 printer has a compact and lightweight body combined with high performances. Not only does this printer print barcodes clearly, it can also enlarge and print various types of fonts and Kanji characters in a free layout.

The Operator's Manual will help you to understand the basic operations of the printer such as setup, installation, configuration, cleaning and maintenance.

MB400 is superb in durability, as it has been designed with the premises of printing barcodes. Special considerations have also been taken so that the printer can be easily maintained.

As a portable printer, MB400 can easily print and dispense labels to enable the application of labels on-site.

This Quick Guide is an extract of the more common functions which you need to start the printer running. For more advanced functions, please refer to the Operator's Manual

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MB400 Specifications

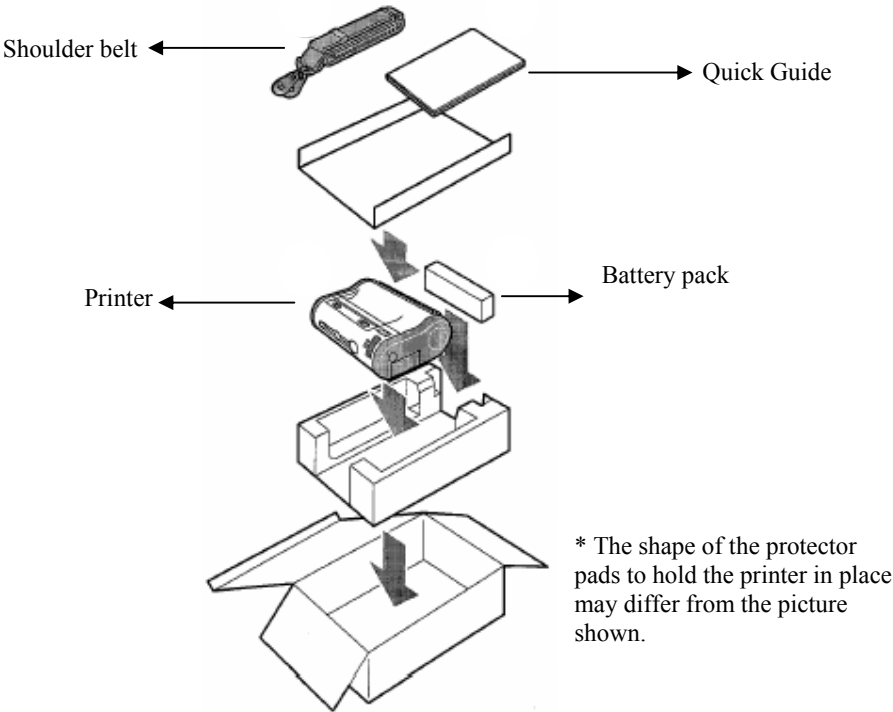
Item		Details
Printing Method		Thermal
Head Density		8 dots/mm
Maximum Printing Size		Width 104mm x Pitch 297mm
Printing Speed		Max. 50mm/sec. (may vary from environment)
Printing mode		Continuous, Dispense and Journal
Size		Printer : W190mm x D80mm x H139mm
Weight		Approximately 960g (including battery)
Power (Battery)		Packet type (Lithium ion battery) : 1600mAh; Will print 1 roll of journal paper (25m) on continuous mode when fully charged (printing rate at 15% or less)
Paper		Always use specified labels
Label Shape		Roll; Maximum outer diameter: 58mm
Label Size		Width: 50-11mm (53-114mm) Pitch (Continuous): 25-297mm (28-300mm) Pitch (Dispense): 25-182mm (28-185mm) Numbers indicated in () are for pasteboards, non-adhesive or non-separated labels and journal paper.
Thickness		Continuous: 0.06 - 0.18mm Dispense: 0.18mm (the thickness of the pasteboard is under 0.06mm)
Self Diagnosing Function		Battery Check / Paper end Head Open / Test Printing / Head Check
Power Save Function		In Sleep mode after 5 seconds without any operation, and Auto Power Off mode after 5 minutes without any operation.
Interface	RS232C/TTL	High density special connector
	Optical Coupler	IrDA (IrDA Standard Ver. 1.2 compliant)

Status (LED)	Mode	Details	Cause	Solution
Green (blinking)	On-Line (Printing /Receiving data)	Buffer near full	Approaching the buffer quota	Pause the data transmission and wait till the buffer is empty before trying again.
Red (blinking)	All Modes	Low Battery	Batteries are not recharged properly.	Recharge the batteries.

The power will automatically be turned off 30 seconds after “Low Battery” is indicated. Make sure the power is off before removing the battery pack and recharge the battery.

Installation

Remove the MB400 from its packing container. Check to make sure you have the following items:



Other Accessories

- Cable Lock - Attached to the interface connector.



- Adjustment Screwdriver - Located inside the printer (under the label feed area).



Considerations

Careful considerations must be given when selecting location of the printer, especially to environmental considerations. To obtain optimum results from MB400, always try to avoid operation locations influenced by:

- Direct or bright sunlight, as this will make the label sensor less responsive and may cause the label to be sensed incorrectly.
- Locations which have extreme temperatures, as this can create electrical problems on the circuits in the printer.
- The installed location of the printer should ideally be in areas free from dust, humidity and sudden vibrations.

Consumables

Always use SATO recommended labels in MB400 printer. The use of incorrect material may cause malfunctions of the printer and void the printer warranty.

Troubleshooting

The status of the printer is shown on the status indicator. To solve the problems, follow the instructions in the table.

Status (LED)	Mode	Details	Cause	Solution
Red	After power input	1. Program error 2. FLASH ROM error	FLASH ROM reading/writing error	1. Replace the substrate 2. Adjust the program again
Red (blinking)	On-Line	Open cover	1. Cover isn't locked. 2. Cover micro switch is not working properly.	1. Lock the cover. 2. Adjust the micro switch.
		Paper end	Out of paper	Set new labels
		Sensor error	1. Sensor level isn't accurate. 2. Sensor type doesn't match. 3. Label is meandering. 4. Sensor position isn't accurate.	1. Adjust the sensor level. 2. Adjust the sensor type. 3. Reset the labels properly. 4. Adjust the position of the sensor.
Red/Orange (blinking)	On-Line	Buffer over	1. Received data over the buffer quota. 2. The protocol between the printer and host does not match.	1. Adjust the data amount at the host side so that it won't exceed the buffering quota. 2. Match the protocol.
Orange (blinking)	On-Line	Print Head error	The print head is damaged	Replace the print head
Orange/Green (blinking)	On-Line	Head overheating protection	Not an error. The overheating protection function	The function will deactivate when the print

		function	activates when the print head temperature rises above 70°C.	head temperature goes down to 60°C.
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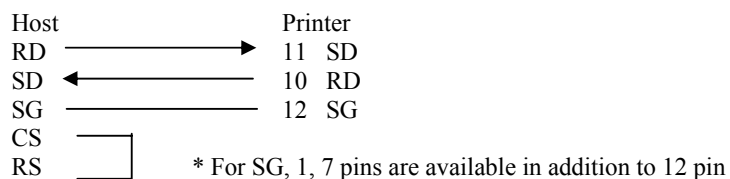
ACK/NAK Control Type

This communication protocol is a software handshake type based on ACK/NAK.

When the print data (STX-ETX) is sent from the host under the following conditions, the received data is not guaranteed.

1. When the printer is in the offline condition.
2. When an error occurs with the printer.

Wiring



*Note

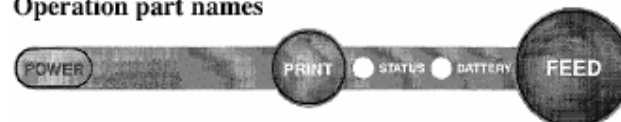
For writing, some host types are required to loop CS and RS on the host side (always keep CS and RS “High”). Therefore, you must confirm the host type before connecting.

Input and Output Signal

Pin No.	Signal Name	Direction	Description
11	SD	Output	The data transferred from the printer to the host.
10	RD	Input	The data transferred from the host to the printer.
1, 7 or 12	SG	-	Signal ground

Components

Operation part names



POWER Key

PRINT Key

FEED Key

STATUS LED Indicator

BATTERY LED Indicator

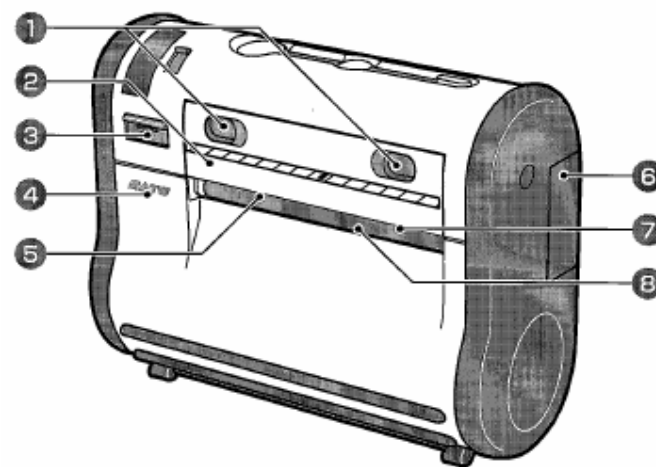
Turns the power on and off.

Sets the printer to on-line or off-line.

Feeds labels.

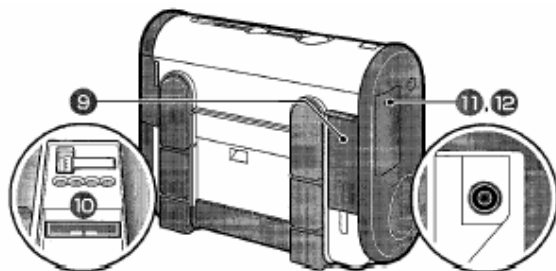
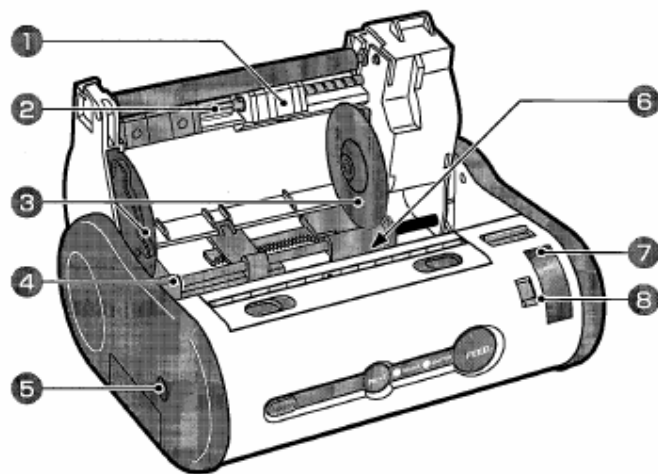
Indicates the status of the printer.

Indicates the status of the battery.



No.	Item	Details
1	Dispense/Continuous switch lever	Switches the print mode (dispense/continuous)
2	Dispenser unit	Move this when the Dispense mode is selected
3	Front cover Open/Close lever	Opens and closes the front cover
4	Front cover	Open this for setting labels
5	Easy cutter	Cuts printed labels

6	Battery cover	Insertion of battery pack
7	Label ejection	Collection point for printed labels
8	Platen Roller	



RS232 Connection

Connection Specification

Signal Level:

Low Level → -3V to -12V

High Level → +3V to +12V

Connector Manufacturer: Nippon Kouku Denshi, Type RL01-R12P

Pin Assignments

Pin No	Signal Name	Type	Description
1	SG	-	Signal Ground
2	-	-	Not Used
3	-	-	Not Used
4	-	-	Not Used
5	-	-	Not Used
6	-	-	Not Used
7	SG	-	Signal Ground
8	-	-	Not Used
9	-	-	Not Used
10	RD	Input	Receiving Data
11	SD	Output	Sending Data
12	SG	-	Signal Ground

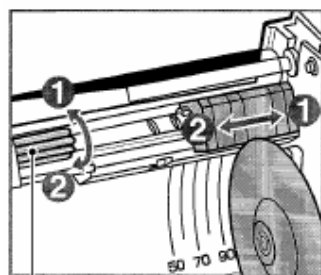
Communication Conditions

Item	Details
Protocol	ACK/NAK Control Type
Communication Type	Asynchronous
Baud Rate (bps)	4800, 9600, 19200, 38400
Data Length	8 bits
Stop Bit	1 bit
Parity Bit	NONE, EVEN, ODD
Codes Used	ASCII Character Codes, JIS Kanji Codes
Transfer Format	LSB (Low level bit leading)
	Start b0 b1 b2 b3 b4 b5 b6 b7 Stop

Control Code	STX (02H), ETX (03H), ACK (06H), NAK (15H)
Error Control Method	Response Check

Adjusting the Position of the Label Sensor

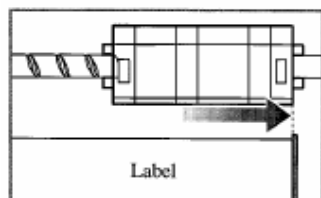
1. Moving the label Sensor to the **Right**.
Turn the Label Sensor Adjustment Dial up.
2. Moving the Label Sensor to the **Left**.
Turn the Label Sensor Adjustment Dial down.



The Label Sensor Adjustment Dial

Using the Sensor

Align the right edge of the sensor with the right edge of the label.

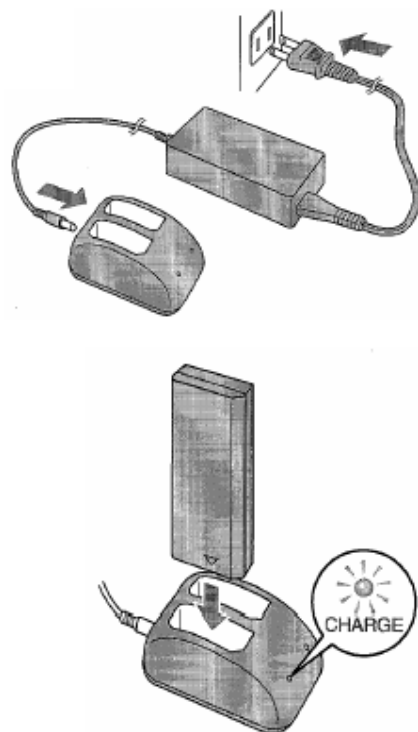


No.	Items	Details
1	Label sensor	Adjust this to the label size used
2	Label sensor adjustment dial	Use this to adjust the location of the label sensor
3	Label guide	Adjust this to the label size used.
4	O ring	Use this ring when fixing the label guide
5	Shoulder belt hook	Attaches the shoulder belt when hanging the printer on shoulder.
6	Adjustment screwdriver	(Supplied accessory)
7	IrDA filter	Location of IrDA receiving element
8	IrDA adjustment lever	Changes the angle of the IrDA receiving element.
9	Interface cover	Covers the interface connector
10	Interface connector (RS232C)	Connects to a computer
11	DC input jack cover	Covers the DC input jack when not in use
12	DC input jack	Connects the AC adapter

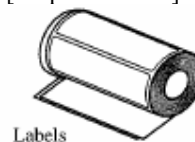
Charging the Battery Pack

You can recharge the battery pack by inserting into the battery charger.

1. Plug one end of the AC adapter into the battery charger and the other end into the wall outlet.
2. Insert the battery pack. Make sure the connector on the battery pack is facing down and insert into the charger.
 - The CHARGE indicator lights up in red when charging starts.
 - The CHARGE indicator lights up in green when charging is completed. (Fully charged)
3. When charging is completed, remove the battery pack from the charger.

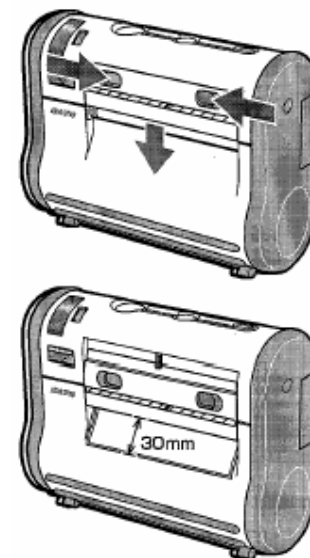


[Dispense Mode]



First perform the previous Steps 1 to 6.

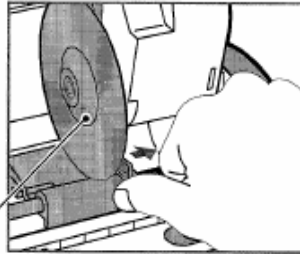
- Pick the Dispense/Continuous switch lever from both sides and slide the Dispenser unit to the direction of the arrow.
- Leave more than 30mm of the label out for the Dispense mode.
- Slide the Dispenser unit until it is set in place.



4. Insert the label roll on the label guide boss inside the front cover.

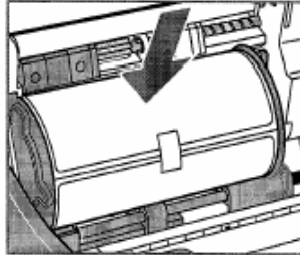
Press the tab to adjust the label guide (right), and adjust the guide to the width of the labels used.

Label guide boss



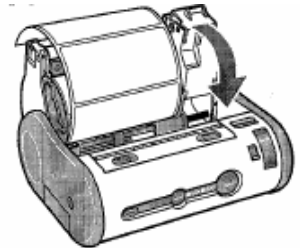
Firmly insert the label roll on the bosses on the left and right of the label guide.

Move the label roll to make sure that it is firmly set on the bosses.



5. After peeling the lead tape on the roll, take the leading edge of the first label on the roll and pull it out via the platen roller. Then turn the front cover in the direction of the arrow.
6. Close the front cover in the direction of the arrow.

Press the front cover until the cover Open/Close lever clicks.



*Note

- If the CHARGE indicator on the charger does not light up, make sure that the battery pack is firmly attached to the charger. The battery might not be able to charge if it is not firmly attached.
- If an already charged battery pack is inserted into the charger, the CHARGE indicator will turn red once (charging), however, it will soon change to green (fully charged).
- If charging a battery pack that has not been used for a long period, the CHARGE indicator will flash for a while. This does not indicate an error, and you can continue charging as it is. If the indicator continues to flash for a long time while charging, replace the battery pack with a new one.
- The battery pack can be charged up to 300 times (during usage in regular temperature). If the battery pack is fully charged but soon runs out, replace the battery pack with a new one.
* Take down the date of purchase of the battery with a marker on the sticker attached to the battery pack as a guideline of the number of times the battery can be recharged (the life of the battery). For example, Date of purchase: 1/9/2002.
- The battery pack cannot be used when using the AC adapter. If the AC adapter jack is plugged into the printer when using the battery, the power will be reset. If there are any remaining print data, they will be lost.

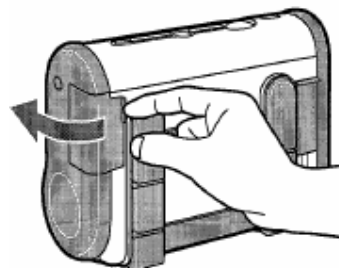
Charging Time.

The charger time for one battery pack from empty until fully charged is about 90 minutes. For two battery packs, it takes about 130 minutes. The charging time varies depending on the environment.

Installing and Removing Battery Pack

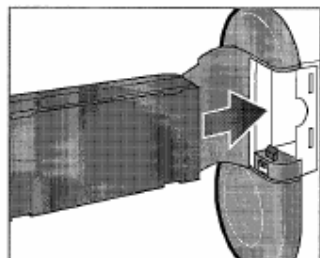
Remove the protection case.

1. Place your finger on the battery cover ribbed area, and open the battery cover in the direction of the arrow.

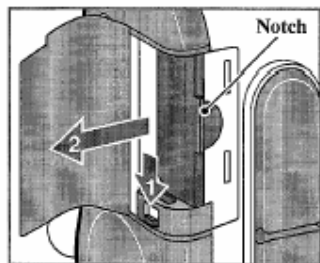


2. Insert the battery pack with the connector facing towards the end.

* Insert the battery all the way in until the lock clicks into place.



3. To remove the battery pack, press down the lock lever and release the lock. Then pull the battery pack out placing your finger into the notch.



** Take caution not to drop the battery pack when removing it. The battery pack may be damaged if it is dropped.

Battery Status

1. Battery near end
When the battery is getting low, the battery near end is detected and the BATTERY LED indicator lights up in orange. The keys can still be operated, however the battery should be recharged.
2. Low Battery Error
When the battery is empty, a low battery error is detected and the BATTERY LED indicator lights up in red. The keys cannot be operated, and after 30 seconds the power automatically turns off. Make sure to recharge the battery.

Status	BATTERY LED indicator
Battery near end	Light (orange)
Low battery error	Light (red)

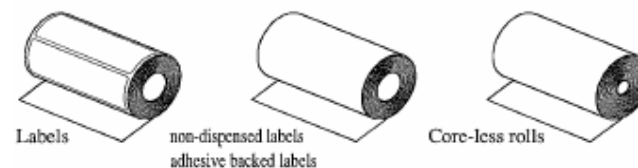
** The BATTERY LED indicator does not light up during printing or an error, even if battery near end or low battery error has been detected.

Media Loading

Setting Labels

The method of setting labels may vary depending on the print mode.

[Continuous Mode]



1. Press the cover Open/Close lever in the direction of the arrow to release the front cover lock.
2. Slide the front cover to open. Hold the front cover and slide it in the direction of the arrow until it stops.
3. Open the front cover in the direction of the arrow.

