EPSON
EXCEED YOUR VISION

# TM-S1000 for EMEA

# Technical Reference Guide

## Product Overview

Describes features and general specifications for the product.

## Setup

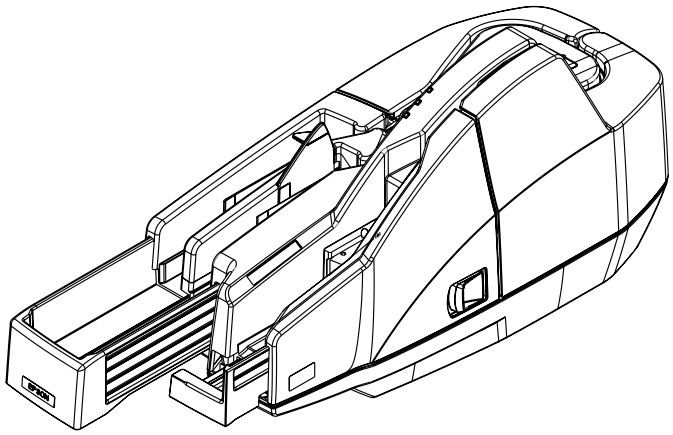
Describes setup and installation of the product.

## Application Development Information

Describes how to control the scanner and necessary information when you develop applications.

## Handling

Describes how to handle the product.



M00009201
Rev. B

## Cautions

- No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of Seiko Epson Corporation.
- The contents of this document are subject to change without notice. Please contact us for the latest information.
- While every precaution has taken in the preparation of this document, Seiko Epson Corporation assumes no responsibility for errors or omissions.
- Neither is any liability assumed for damages resulting from the use of the information contained herein.
- Neither Seiko Epson Corporation nor its affiliates shall be liable to the purchaser of this product or third parties for damages, losses, costs, or expenses incurred by the purchaser or third parties as a result of: accident, misuse, or abuse of this product or unauthorized modifications, repairs, or alterations to this product, or (excluding the U.S.) failure to strictly comply with Seiko Epson Corporation's operating and maintenance instructions.
- Seiko Epson Corporation shall not be liable against any damages or problems arising from the use of any options or any consumable products other than those designated as Original EPSON Products or EPSON Approved Products by Seiko Epson Corporation.

## Trademarks

EPSON is a registered trademark of Seiko Epson Corporation in the U.S. and other countries.

# For Safety

## Key to Symbols

The symbols in this manual are identified by their level of importance, as defined below. Read the following carefully before handling the product.

| | |
|---|---|
| **WARNING** | You must follow warnings carefully to avoid serious bodily injury. |
| **CAUTION** | Provides information that must be observed to prevent damage to the equipment or loss of data.<br>• Possibility of sustaining physical injuries.<br>• Possibility of causing physical damage.<br>• Possibility of causing information loss. |
| CAUTION | Provides information that must be observed to avoid damage to your equipment or a malfunction. |
| NOTE | Provides important information and useful tips. |

## Warnings

**WARNING**

- To avoid risk of electric shock, do not set up this product or handle cables during a thunderstorm
- **Never insert or disconnect the power plug with wet hands.**
  Doing so may result in severe shock.
- **Handle the power cable with care.**
  Improper handling may lead to fire or electric shock.
  * Do not modify or attempt to repair the cable.
  * Do not place any heavy object on top of the cable.
  * Avoid excessive bending, twisting, and pulling.
  * Do not place the cable near heating equipment.
  * Check that the plug is clean before plugging it in.
  * Be sure to push the plug all the way in.
- **Be sure to use the specified power source.**
  Connection to an improper power source may cause fire or shock.
- **Do not place multiple loads on the power outlet.**
  Overloading the outlet may lead to fire.
- **Shut down your equipment immediately if it produces smoke, a strange odor, or unusual noise**.
  Continued use may lead to fire. Immediately unplug the equipment and contact your dealer or a Seiko Epson service center for advice.
- **Never attempt to repair this product yourself.**
  Improper repair work can be dangerous.
- **Never disassemble or modify this product.**
  Tampering with this product may result in injury or fire.
- **Do not allow foreign matter to fall into the equipment.**
  Penetration by foreign objects may lead to fire.
- **If water or other liquid spills into this equipment, do not continue to use it.**
  Continued use may lead to fire. Unplug the power cord immediately and contact your dealer or a Seiko Epson service center for advice.
- **If you open the DIP switch cover, be sure to close the cover and tighten the screw after adjusting the DIP switch.**
  Using this product with the cover open may cause fire or electric shock.

## Cautions

**CAUTION**

- **Do not connect cables in ways other than those mentioned in this manual.**
  Different connections may cause equipment damage or fire.
- **Be sure to set this equipment on a firm, stable, horizontal surface.**
  The product may break or cause injury if it falls.
- **Do not use this product in locations subject to high humidity or dust levels.**
  Excessive humidity and dust may cause equipment damage or fire.
- **Do not place heavy objects on top of this product. Never stand or lean on this product.**
  Equipment may fall or collapse, causing breakage and possible injury.
- **Do not use aerosol sprayers containing flammable gas inside or around this product.**
  Doing so may cause fire.
- **To ensure safety, unplug this product before leaving it unused for an extended period.**

# *Restriction of Use*

When this product is used for applications requiring high reliability/safety such as transportation devices related to aviation, rail, marine, automotive etc.; disaster prevention devices; various safety devices etc; or functional/precision devices etc, you should use this product only after giving consideration to including fail-safes and redundancies into your design to maintain safety and total system reliability. Because this product was not intended for use in applications requiring extremely high reliability/safety such as aerospace equipment, main communication equipment, nuclear power control equipment, or medical equipment related to direct medical care etc, please make your own judgment on this product's suitability after a full evaluation.

# About this Manual

## Aim of the Manual

This manual was created to provide information on development and design of scanner applications for developers.

## Manual Content

The manual is made up of the following sections:

# Contents

# Product Overview

This chapter describes features and specifications of the product.

## Features

The TM-S1000 is a compact document scanner that integrates functions for processing business documents such as checks, and there are 30 dpm models and 60 dpm models available for different document processing speeds.



### Single Pass Processing

- Can read magnetic ink characters on a check (E13B, CMC7)
- Can obtain the image data of both sides of a document
- Can scan and recognize OCR A/B fonts in document images
- Can paste process recording image data on the front or back image of a check (Electric endorse)
- Can analyze the image quality (IQA* function)
- Can decode barcodes.
- Can perform franking on the processed documents

IQA (Image Quality Assurance): Conforms to the recommendations of FSTC (Financial Services Technology Consortium).

### Standard Equipment

- Double sheet feeding detector
- Auto sheet feeder
- Detection of checks inappropriately inserted
- Function for sorting documents into two pockets
- Maintenance counter

### Easy Operation

- Easy drop-in paper loading
- Universal design
- Internal alarm sounds allow users to be informed of various events.
- TM-S1000 API is provided for easy application development.

## Franking Cartridge

- Can stamp on documents for electronic settlement
- Franking depending on reading results is selectable.

# Product Configuration

## Interface

USB Hi-Speed/Full-Speed interface (USB 2.0 compliant)

> **CAUTION** The specified processing speed is not achievable when using USB Full-Speed.

## Color

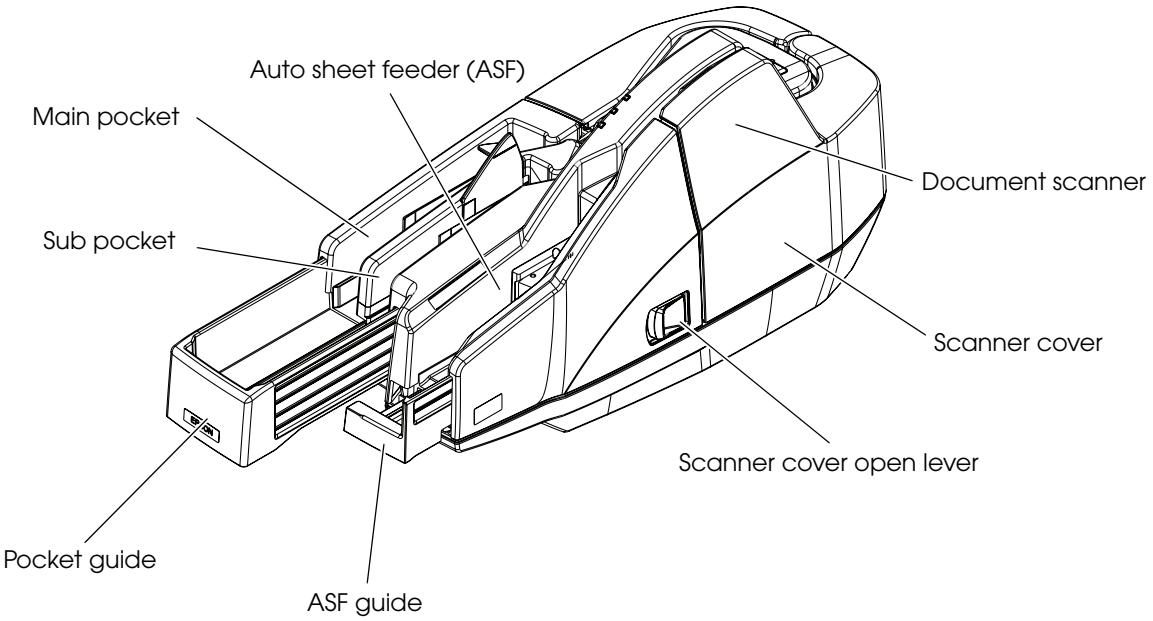
EDG (Epson Dark Gray)

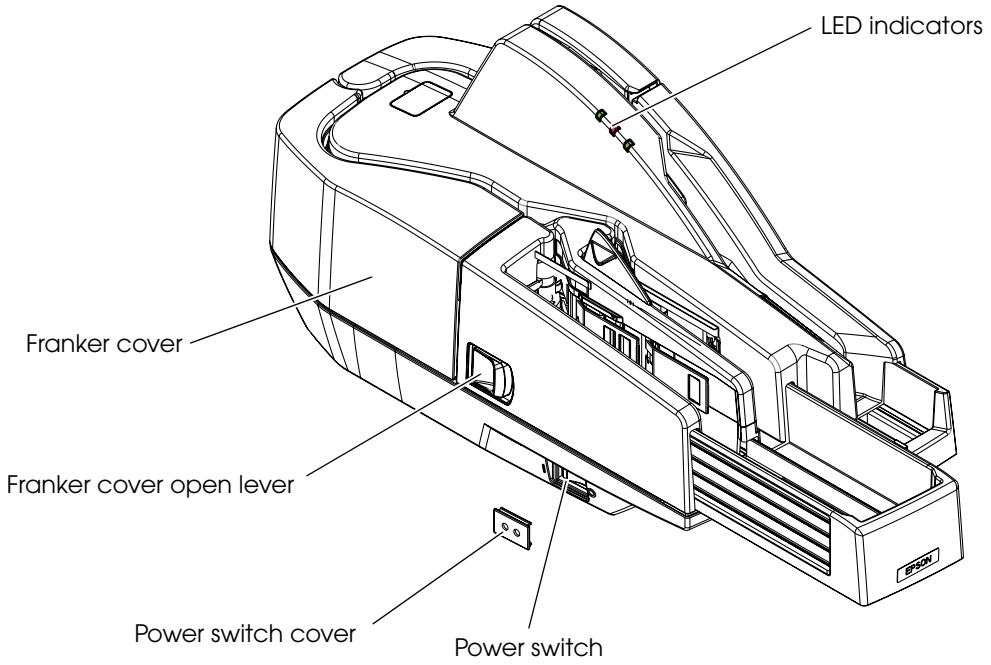
## Accessories

### Attachments

- External power supply (Model: AC adapter. C)
- Power switch cover
- USB cable (length: 170 cm [66.9 in])
- Exclusive franking cartridge (Model: EFC-01)
- User's manual (8 languages:
  English, Dutch, Spanish, French, Italian, German, Portuguese, Others, Arabic)

# Part Names and Functions



## Power Switch

Turns the scanner on or off. The marks on the switch: ( ⏻ / | )

**CAUTION**

**Before turning on the scanner, be sure to check that the AC adapter is connected to the power supply.**

## Power Switch Cover

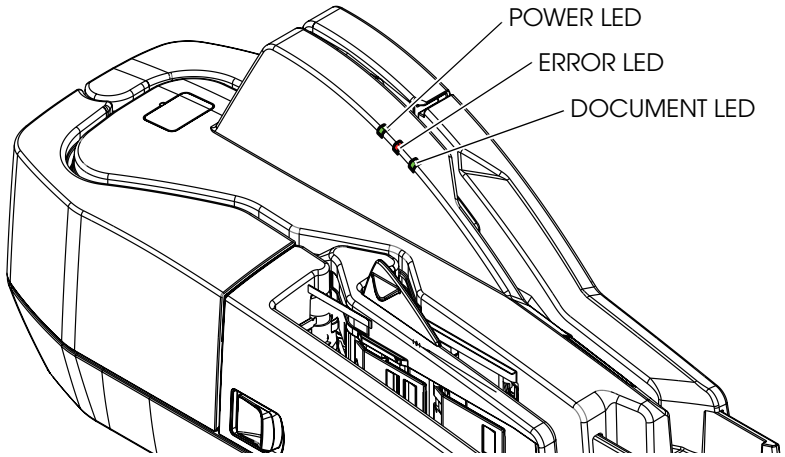
Install the power switch cover that comes with the TM-S1000 onto the scanner to prevent inadvertent changing of the power switch, to prevent tampering, and to improve the appearance of the scanner.

To reset the scanner when the power switch cover is installed, insert a long, thin object (such as the end of a paper clip) into the hole in the power switch cover and press the power switch.

**WARNING**

**If an accident occurs with the power switch cover attached, unplug the power cord immediately.**
Continued use may cause fire or shock.

## LED Indicators



## POWER LED (Green)

- Lights when the power supply is on.
- Goes out when the power supply is turned off.

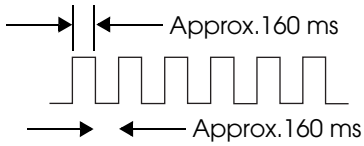
## ERROR LED (Orange)

Lights or flashes when the scanner is offline.

- Lights after the power is turned on or after a reset (offline). Automatically goes out when the scanner is ready.
- Flashes when an error occurs or when waiting for document removal. (For details about the flash codes, see "Error Status" on page 26.)

NOTE

When waiting for document removal, the ERROR LED flashes as shown below.



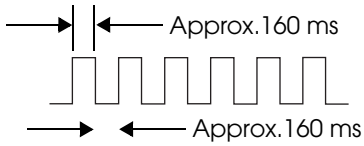

- Out during regular operation (online).

## DOCUMENT LED (Green)

- Lights when the scanner is ready to process documents in the ASF or while the scanner is processing documents.
- Flashes when the scanner is waiting for document insertion.

NOTE

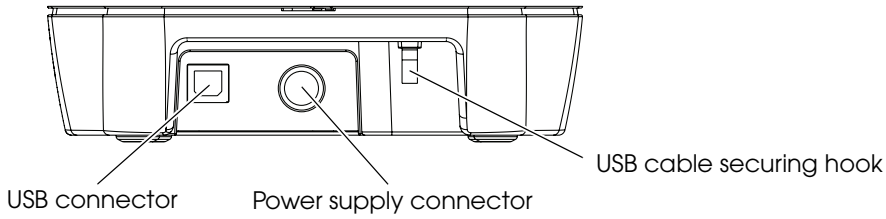
When waiting for document removal, the ERROR LED flashes as shown below.




- Out except for the cases above.

## Connectors

All cables are connected to the connector panel on the lower rear of the scanner.




- Power supply connector: Connects the power supply unit
- USB connector: Connects the scanner with the host computer interface.
- USB cable securing hook: Hooking the USB cable on the USB cable securing hook prevents the cable from falling off.



## Offline

The scanner automatically goes offline under the following conditions:

- During power on (including resetting with the interface) until the scanner is ready
- When the scanner cover is opened.
- When the franker cover is opened.
- When an error has occurred.

# Processing Modes

The TM-S1000 has multiple processing modes that are selectable in accordance with how you want to use the scanner.

> NOTE For detailed information about processing modes, see the TM-S1000 API Reference Guide.

| Processing mode | Description | 30 dpm model | 60 dpm model |
|---|---|---|---|
| **High-speed mode** | The scanner processes a document without stopping from feeding a document until ejecting it. | ✔* | ✔* |
| **Confirmation mode w/o overlap** | After reading a document, the scanner stops processing before ejecting it and waits for a command from a PC to restart processing. | ✔ | ✔ |
| **Confirmation mode with overlap** | | | ✔ |

Without overlap: The next document is fed after a document is ejected into a pocket.

With overlap: The next document is fed while processing a document is still in progress.

*: Depending on the franking/eject process setting, the scanner stops processing before ejecting the document and restarts processing depending on the reading result. (For details, see "Processing speed" on page 19.)

## Processing speed

The processing speed (dpm: the number of documents that can be processed in 1 minute) differs depending on the driver setting.

### For 30 Dpm Model

| | Driver/Application settings*1 | Franking/Eject process setting | Processing speed |
|---|---|---|---|
| **High-speed mode** | All disabled | Regardless | 30 dpm |
| | One or more enabled | Both disabled | |
| | | Either or both enabled | 28 dpm |
| **Confirmation mode w/o overlap** | All disabled | Regardless | 28 dpm*2 |
| | One or more enabled | Regardless | |

*1: Judgements of the following items can be enabled with the driver.

- ∗Magnetic waveform detection result
- ∗MICR "?" detection result
- ∗IQA result
- ∗Barcode decode result

Settings with an application are available only for the confirmation mode.

*2: The processing speed is a maximum. It may slow down depending on the environment (including the application) and conditions of documents.

NOTE

The processing speed may slow down while saving data in the HDD.

## For 60 Dpm Model

| | Driver/Application settings*1 | Franking/Eject process setting | Processing speed |
|---|---|---|---|
| **High-speed mode** | All disabled | Regardless | 60 dpm |
| | One or more enabled | Both disabled | |
| | | Either or both enabled | 32 dpm |
| **Confirmation mode with overlap** | All disabled | Regardless | 40 dpm*2 |
| | One or more enabled | Regardless | 32 dpm*2 |
| **Confirmation mode w/o overlap** | All disabled | Regardless | 28 dpm*2 |
| | One or more enabled | Regardless | |

*1: Judgements of the following items can be enabled with the driver.

- ∗Magnetic waveform detection result
- ∗MICR “?” detection result
- ∗IQA result
- ∗Barcode decode result

Settings with an application are available only for the confirmation mode.

*2: The processing speed is a maximum. It may slow down depending on the environment (including the application) and conditions of documents.

NOTE

The processing speed may slow down while saving data in the HDD.

## Selectable processes

The following processes can be set with the application.

- Franking process
  - •With franking
  - •Without franking
- Ejection process
  - •Ejects documents to the Main pocket
  - •Ejects documents to the Sub pocket
  - •Does not eject documents
  - •Waterfall
- Electric endorse
  - •With electric endorse
  - •Without electric endorse

Each process is performed based on the parameters shown below.

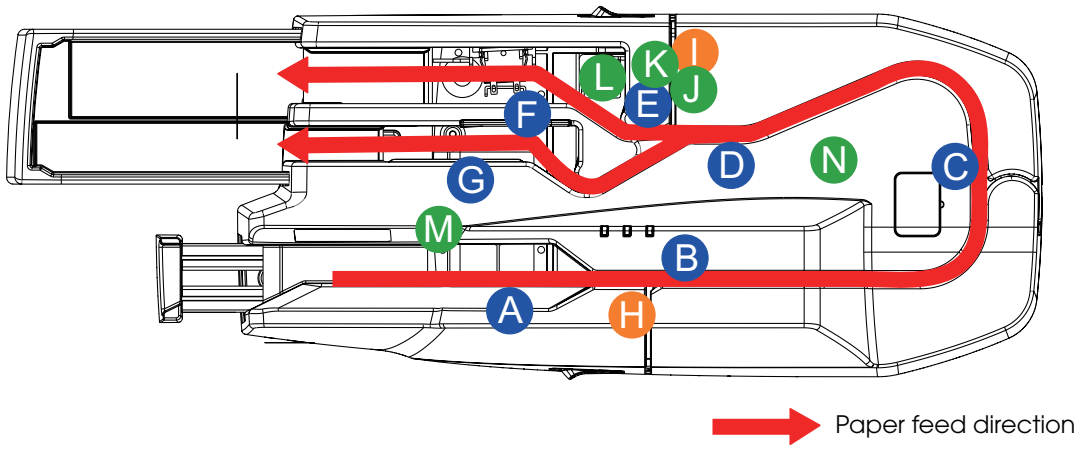
| | High-speed mode | Confirmation mode |
|---|---|---|
| **Franking process** | • Double feeding detection result<br>• Incorrect insertion detection result<br>• External noise detection result | • Double feeding detection result<br>• Incorrect insertion detection result<br>• External noise detection result<br>• Magnetic waveform detection result<br>• MICR “?” detection result<br>• IQA result<br>• Barcode decode result |
| **Ejection process** | • Double feeding detection result<br>• Incorrect insertion detection result<br>• External noise detection result | • Double feeding detection result<br>• Incorrect insertion detection result<br>• External noise detection result<br>• Magnetic waveform detection result<br>• MICR “?” detection result<br>• IQA result<br>• Barcode decode result |
| **Electric endorse** | • Double feeding detection result<br>• Incorrect insertion detection result<br>• External noise detection result<br>• Magnetic waveform detection result<br>• MICR “?” detection result<br>• IQA result<br>• Barcode decode result | • Double feeding detection result<br>• Incorrect insertion detection result<br>• External noise detection result<br>• Magnetic waveform detection result<br>• MICR “?” detection result<br>• IQA result<br>• Barcode decode result |

NOTE

- If the waterfall function is enabled with the driver, the setting of the ejection process is ignored. When the ejection pocket is near-full, the documents are automatically ejected to the other pocket.

# Sensors

There are 7 paper sensors, 2 cover open sensors, and 5 other sensors.




## Paper Sensors

### ASF sensor (A)

This sensor is located in the feeder paper path. It detects when a document is in the ASF. When the sensor detects a document, the DOCUMENT LED lights if scanning is possible.

### Paper length sensor (B)

This sensor is located in the feeder paper path. It is mainly used for internal processing, but also includes a function for detecting a piece of paper remaining in the feeder path in the event of a paper jam or the like.

### Middle sensor (C)

This sensor is located in the feeder paper path. It is mainly used for internal processing, but also includes a function for detecting a piece of paper remaining in the feeder path in the event of a paper jam or the like.

### Franking sensor (D)

This sensor is located in the feeder paper path. It detects when a document has reached the franking printing section.

### Eject sensor (E)

This sensor is located in the feeder paper path. It detects whether a document is properly ejected and stored in a pocket.

### Main pocket nearly full sensor (F)

This sensor is located in the Main pocket. It detects whether documents stored in the pocket need to be removed.

NOTE

- The sensor detects the nearly full status when the thickness of the documents in the Main pocket exceeds the specified value (80 or more of documents whose thickness is 0.13 mm without folds, wrinkles, or roughness).
- To prevent paper jams, use the scanner in the driver mode that stops continuous processing when a near-full pocket is detected. For detailed information about the driver setting, see the TM-S1000 API Reference Guide.

### Sub pocket nearly full sensor (G)

This sensor is located in the Sub pocket. It detects whether documents stored in the pocket need to be removed.

NOTE

- The sensor detects the nearly full status when the thickness of the documents in the Sub pocket exceeds the specified value (40 or more of documents whose thickness is 0.13 mm without folds, wrinkles, or roughness).
- To prevent paper jams, use the scanner in the driver mode that stops continuous processing when a near-full pocket is detected. For detailed information about the driver setting, see the TM-S1000 API Reference Guide.

## Cover Open Sensors

### Scanner cover open sensor (H)

This sensor detects the opening/closing of the scanner cover. The scanner automatically goes offline when the cover is opened. It goes back online when the scanner cover is closed.

### Franker cover open sensor (I)

This sensor detects the opening/closing of the franker cover. The scanner automatically goes offline when the cover is opened. It goes back online when the franker cover is closed.

## Other Sensors

### Franking cartridge sensor (J)

This sensor detects whether the franking cartridge is installed or not.

### Franking cartridge position sensor (K)

The franking cartridge is installed in the franking cartridge holder, and the franking operation is achieved by a motor driving the cartridge holder. The scanner has a franking cartridge sensor for detecting the position of the cartridge holder.

### Pocket switch board sensor (L)

The scanner has two pockets, and a switch board for switching the direction of each of the pockets. This sensor detects the position of the switch board.

### Hopper position sensor (M)

This sensor is located in the ASF. It detects the position of the hopper, which holds documents in place.

### Paper thickness sensor (N)

This sensor detects the level difference and thickness in order to determine whether or not paper has been double fed.

| NOTE | Even if a double feed is detected, it is still possible to obtain MICR and image data that has been read, and to carry out print electronic endorsements and franking. |
|---|---|

# Maintenance Counter

The TM-S1000 has the maintenance counter to get the following counts.

| Counter | Counter type | Unit |
|---|---|---|
| Reading count | Resetable | Number of times (1 ~ 4,294,967,295) |
| | Cumulative | Number of times (1 ~ 4,294,967,295) |
| Hopper open/close count | Resetable | Number of times (1 ~ 4,294,967,295) |
| | Cumulative | Number of times (1 ~ 4,294,967,295) |
| Franking drive count | Resetable | Number of times (1 ~ 4,294,967,295) |
| | Cumulative | Number of times (1 ~ 4,294,967,295) |
| Pocket switch count | Resetable | Number of times (1 ~ 4,294,967,295) |
| | Cumulative | Number of times (1 ~ 4,294,967,295) |
| Product operation time | Resetable | Hour (1 ~ 71,582,788) |
| | Cumulative | Hour (1 ~ 71,582,788) |

- Reading count: Counts the number of documents read.
- Hopper open/close count: Counts the number of times that the hopper in the ASF switches from the closed state to the open state.
- Franking drive count: Counts the number of times that the franker is driven.
- Pocket switch count: Counts the number of times that the direction is switched from the Main pocket to the Sub pocket.
- Product operation time: Counts the number of hours that the power has been on.

# Error Status

There are two possible error types: recoverable errors and unrecoverable errors.

## Recoverable Errors

Processing is no longer possible when recoverable errors occur. They can be recovered easily by turning the power off and then on again or sending an error recovery command from the driver after eliminating the cause of the error.

| Error | Error description | Error LED flash code<br>Approx.320 ms<br>Approx.5120ms | Recovery measure |
|---|---|---|---|
| Mechanism position error | When any of the following errors occurs during the initialization and operation.<br>• Error detected during hopper position detection operation.<br>• Error detected during franker position detection operation.<br>• Error detected during pocket switch board position detection operation. |  | Remove the cause (foreign matter or papers) and call BiCancelError of the TM-S1000 API or turn off/on the power. |

| Error | Error description | Error LED flash code<br>Approx.320 ms<br>Approx.5120ms | Recovery measure |
|---|---|---|---|
| Paper jam error | • After initialization, paper detected before the CIS. |  | Remove the paper and call BiCancelError of the TM-S1000 API or turn off/on the power. |
| | • Paper jam. (Paper length sensor, middle sensor, franking sensor, or ejection sensors detected paper feed error.)<br>• ASF failed in feeding paper. | | Remove the jammed paper and call BiCancelError of the TM-S1000 API or turn off/on the power. |
| | • Too short/long paper detected. | | Remove the paper left in the paper path and call BiCancelError of the TM-S1000 API or turn off/on the power. |
| | • Cover opened during paper feeding. | | If the paper is left in the paper path, remove it and call BiCancelError of the TM-S1000 API with covers closed or turn off/on the power. |
| Reading error (Only when the scanner is set to stop the document at the franking position instead of ejecting it into a pocket if a reading error occurs.) | When any of the following errors occurs in the high-speed mode.<br>• A double feeding detected.<br>• Other than "Check was correctly inserted." detected.<br>• External noise detected. |  | Open the franker cover, remove the paper, and call BiCancelError of the TM-S1000 API or turn off/on the power. |
| | When an application judges an error in the confirmation mode. | | |

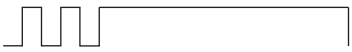
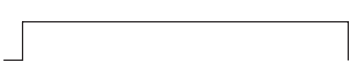
**CAUTION** The error recovery command is valid only if a recoverable error (excluding automatically recoverable errors) occurs.

## Unrecoverable Errors

Processing is no longer possible when unrecoverable errors occur. The scanner must be repaired.

**CAUTION**

**Turn off the power immediately when unrecoverable errors occur.**

| Error | Error description | Error LED flash code<br>Approx.320 ms<br>Approx.5120ms |
|---|---|---|
| Memory R/W error | After R/W checking, the scanner does not work correctly. |  |
| High voltage error | The power supply voltage is extremely high. |  |
| Low voltage error | The power supply voltage is extremely low. |  |
| CPU execution error | The CPU is executing an incorrect address. |  |
| Internal circuit connection error | An image scanner sensor does not work correctly. |  |
| Communication device error | A communication device does not work correctly. |  |

# *Compatibility with the TM-J9000/J9100*

With a minimum modification of the application for the TM-J9000/J9100 (Epson ink-jet printers), you can operate the TM-S1000 with a driver API for the TM-S1000.

NOTE

For detailed information about the differences from the TM-J9000/J9100, see the API Reference Guide.

# Product Specifications

| | | |
|---|---|---|
| Processing speed | | 30 dpm or 60 dpm depending on the model. |
| Operating environment (for satisfying the processing speed specified) | CPU | Without using IQA:<br>At least a Pentium 4, 1.2 GHz or the equivalent<br>Using IQA:<br>At least a Pentium 4, 2.0 GHz or the equivalent |
| | Memory | Without using IQA:<br>At least 256 MB or above the minimum operating system requirement<br>Using IQA:<br>At least 512 MB or above the minimum operating system requirement |
| | HDD | Free space of more than 30 MB (with the driver installed) |
| | Operating system | Microsoft Windows 2000 SP4<br>Microsoft Windows XP 32 Bit SP2, SP3<br>Microsoft Windows Vista 32 bit SP1, SP2<br>Microsoft Windows Vista 64 bit SP1, SP2 |
| | .NET Framework | .NET Framework 1.1, 2.0, 3.0, or 3.5 |
| | Interface | USB 2.0 Hi-speed |
| | Supported development languages | Win32: Visual C++ 6.0, Visual Basic 6.0<br>.NET: Visual C++ .NET 2003, Visual C++ 2005, Visual C# .NET 2003, Visual C# 2005, Visual Basic .NET 2003, Visual Basic 2005 |
| ASF paper supply | | Number of sheets that can be loaded: 100 sheets or fewer |
| MICR reader | Reading method | Permanent magnetic bias |
| | Supported fonts | E13B, CMC7 (Alphabetic characters are not supported.) |
| OCR reader | Supported fonts | E13B<br>OCR A, OCR B |
| Barcode symbols | | Cordabar, Code39, Code128, ITF, JAN8(EAN), JAN13(EAN), UPC-A, UPC-E |
| Electric endorsement | | • Different images can be pasted on each document.<br>• More than one image can be pasted.<br>• Logos, graphics, and TrueType fonts are available. |

| | | |
|---|---|---|
| Pocket storage | Main pocket | 100 sheets or fewer (when the paper thickness is 0.13 mm or less). However, the total thickness must be 13 mm or less including warps. |
| | Sub pocket | 50 sheets or fewer (when the paper thickness is 0.13 mm or less). However, the total thickness must be 6.5 mm or less including warps. |
| Franking cartridge | Type | Exclusive franking cartridge (EFC-01) |
| | Ink color | Red |
| | Life of ink | 18,000 times (based on Epson's standard pattern used for printing) |
| Supply voltage | | DC24 V ± 10% |
| Interface | | USB 2.0 |
| Reliability | Life | 1,000,000 sheets |
| | MTBF | 180,000 hours (A failure is defined as a random failure occurring during the random failure period) |
| | MCBF | 2,470,000 cycles (An overall average failure interval based on failures relating to wear out and random failures up to the lifespan of 1,000,000 transactions.) and random failures up to the lifespan of 1,000,000 transactions.) |
| Overall dimension (W × H × D) | | 355 × 176 × 160 mm {14.0 × 6.93 × 6.30 in} |
| Mass (approx.) | | Approximately 4.0 kg {8.82 lb} |

dpm: documents per minute, dpi: dots per inch (25.4 mm)

## Scanner Specifications

| | | |
|---|---|---|
| Image Scanner | | CIS (Contact Image Sensor) |
| Resolution | | 200 × 200 dpi, 120 × 120 dpi, 100 × 100 dpi |
| Graduation | | 256-level gray scale, 2 values (Black and White) |
| Data compression format | Gray scale | JPEG |
| | Black and White | CCITT/group 4 |
| Data format | Gray scale | TIFF, JPEG, BMP, Raster |
| | Black and White*1 | TIFF*2, BMP |
| Scanning area (W × H) | | 100* (*fixed) × max. 235 mm {3.94* (*fixed) × max. 9.25 in} |
| Image quality | | Complies with IQA (Image Quality Assurance) formulated by FSTC (Financial Services Technology Consortium). |
| Deskew | | Deskews the image on the skewing document, according to the TM-S1000 driver settings. |
| Auto size adjustment | | Crops the image and adjusts the size to the document size, according to the TM-S1000 driver settings. |
| Scanning speed | | 500 mm/s {19.69 in/s} |

dpi: dots per inch (25.4 mm)

*1: Image noises are eliminated automatically when the TM-S1000 driver digitizes grayscale images.

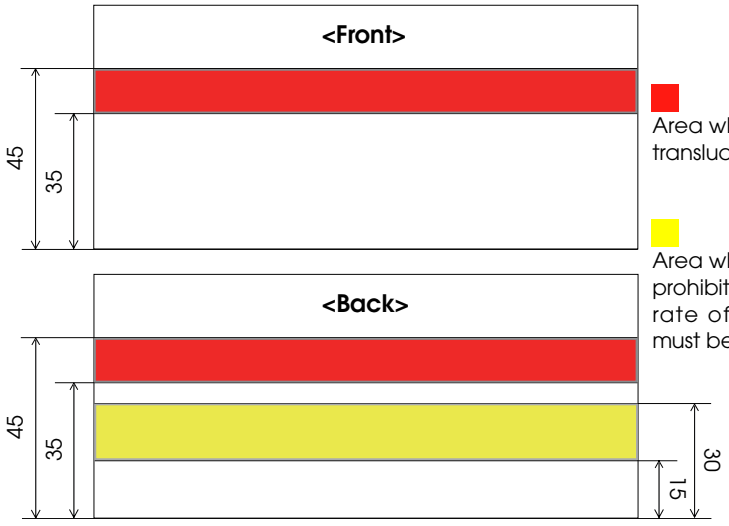
*2: The TIFF format of resolution 200 dpi, binary, CCITT-Group 4 compression conforms to ANSI X9.100-181-2007.

## Paper Specifications

| | |
|---|---|
| Type | Normal paper (single-ply only) |
| Size (H × L) | 68 ~ 120 mm {2.68 ~ 4.72 in} × 120 ~ 235 mm {4.72 ~ 9.25 in} |
| Thickness | 0.075 ~ 0.2 mm {0.003 ~ 0.008 in} (single-ply only) |
| Weight | 60 ~ 120 g/m$^2$ {16 ~ 32 lb} |

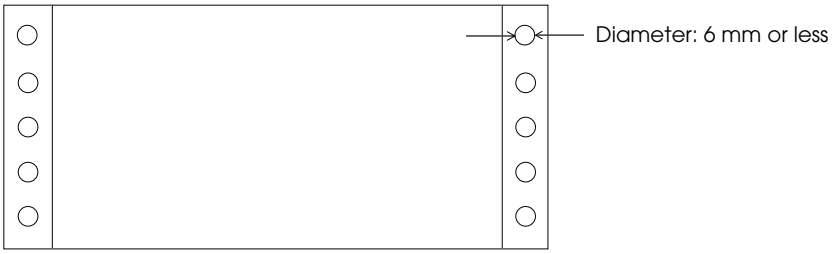
**CAUTION**

- Make sure that the paper has no curl, folds (especially at the top edges), warps, or wrinkles. Otherwise a paper jam may occur.
- Since the paper sensors use a translucent photo sensor and reflective photo sensor, do not use paper that has holes or translucency at the sensor position as shown in the figures below.



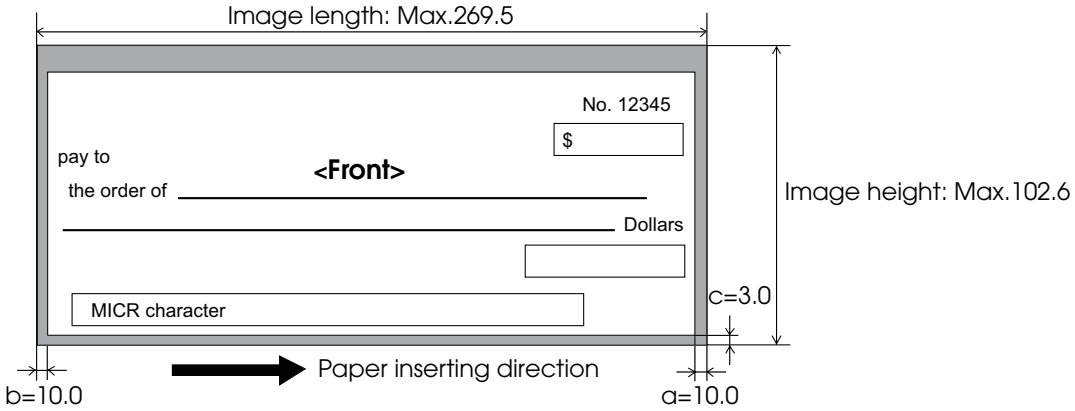

(Units: mm)

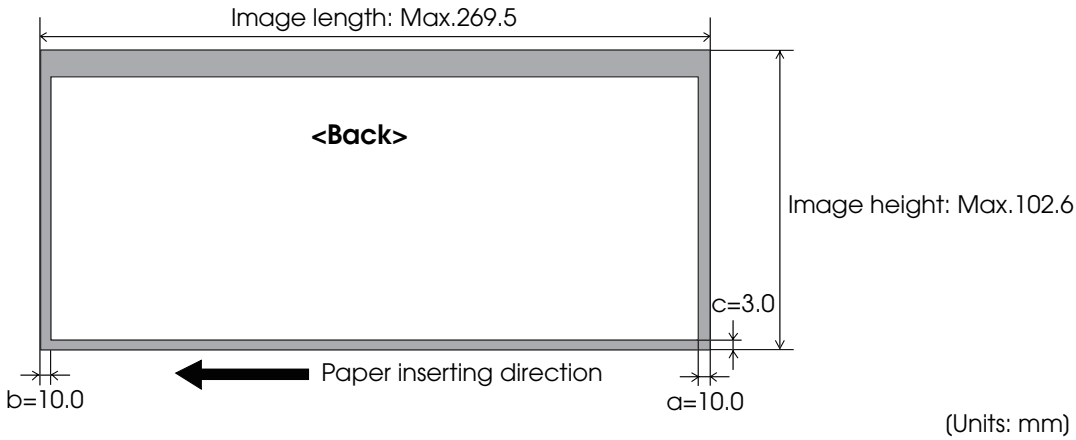
- The paper sensors ignore the range indicated in the figure below for the guide holes in fan-folded paper.



## Scannable Area

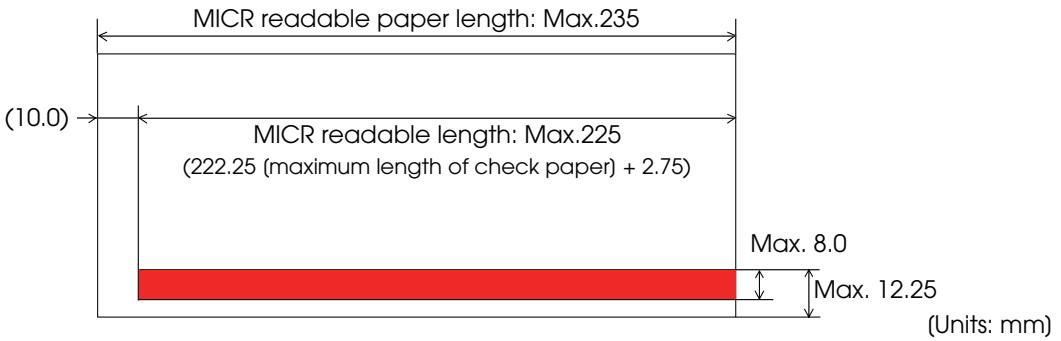
Image scanning may not be possible in the area **a**, **b**, and **c** in the figures below.



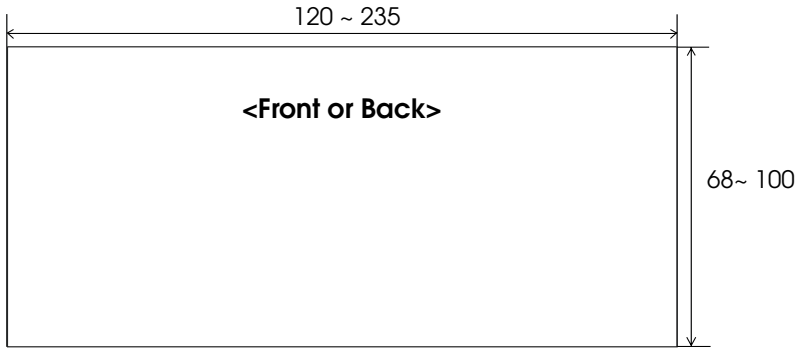

(Units: mm)
Note: Values are typical.

## MICR Readable Area



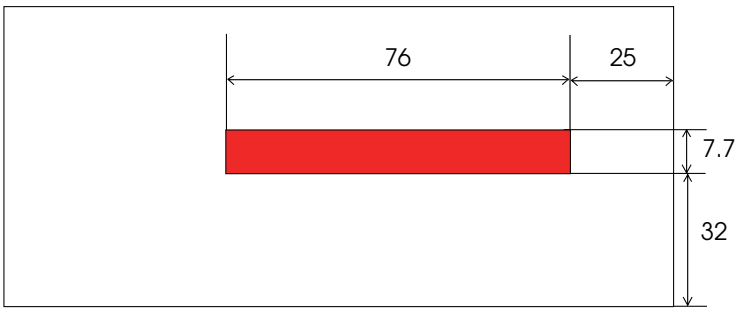

(Units: mm)

## Area for Electric Endorsement




(Units: mm)

## Area for Franking

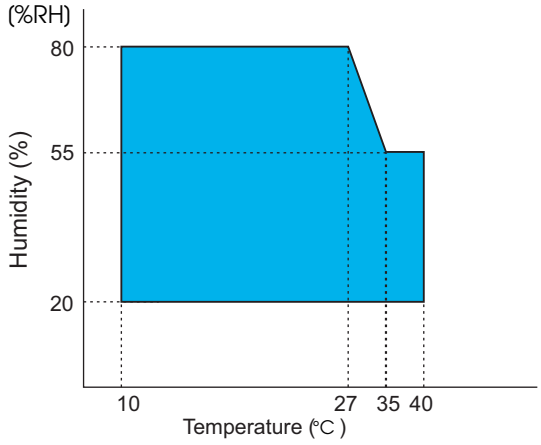



(Units: mm)

## Electrical Characteristics

| | | |
|---|---|---|
| Power supply | | AC adapter, C |
| Operating voltage | | 24 V ± 10% |
| Current consumption | Operating | Mean: Approximately 1.0A |
| | Standby | Mean: Approximately 0.2A |

## Environmental Conditions

| | | |
|---|---|---|
| Temperature/ humidity | Operating | 10 ~ 40°C {50 ~ 104°F}, 20 ~ 80% RH without condensation (See the operating temperature and humidity range below.) |
| | Storage (Factory packing) | -20 ~ 60°C {-4 ~ 140°F}, 5 ~ 85% RH without condensation (120 hours or less at -20 {-4°F} or 60°C {140°F}) |
| | Maximum absolute rated temperature | 70°C {158°F} (This temperature must never be exceeded during operation or storage.) |
| | |  |

## External Dimensions and Mass

### Height

Approximately 176 mm {6.93 in}

### Width

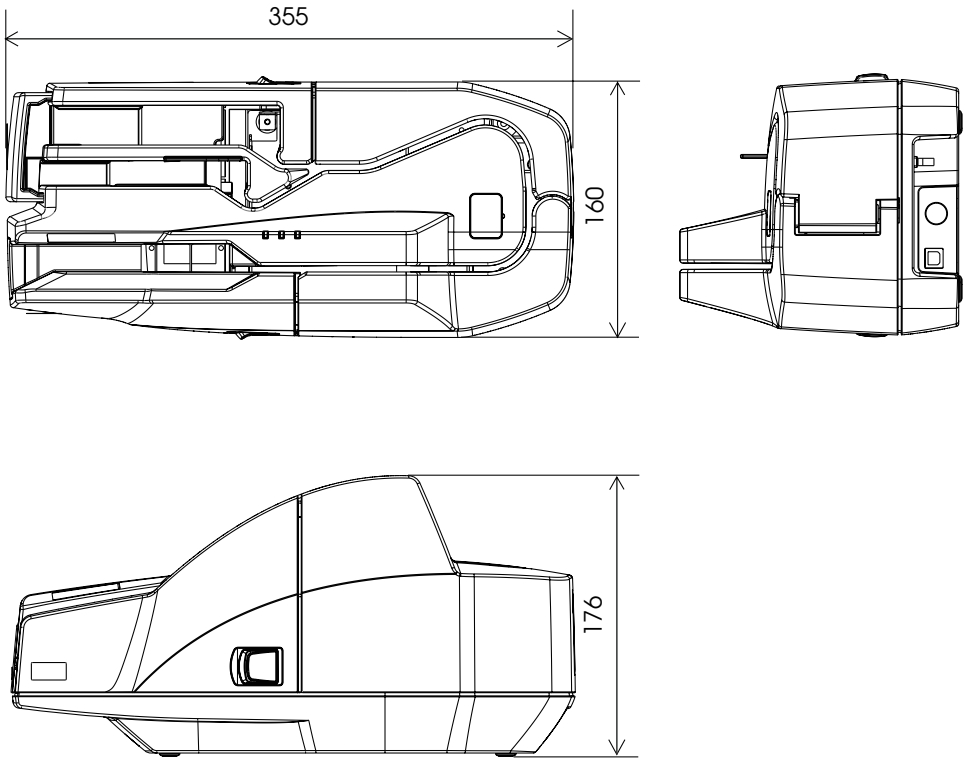
Approximately 355 mm {13.98 in}

### Depth

Approximately 160 mm {6.30 in}

### Mass

Approximately 4.0 kg {8.82 lb}



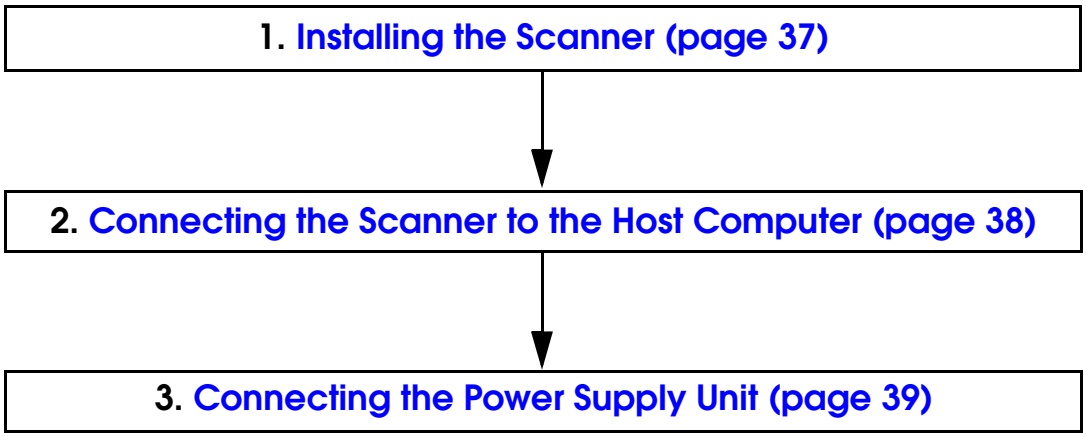

(Unit: mm)

# Setup

This chapter describes setup and installation of the product.

## Flow of Setup

This chapter consists of the following sections along with the setup flow of the product.




| CAUTION | Do not change the settings of the DIP switch under the bottom cover. |
|---|---|

## Installing the Scanner

You can install this scanner only horizontally.

### Important Notes on Installation

- The scanner must be installed horizontally.
- Do not place the scanner in dusty locations.
- Do not catch cables or allow foreign matter under the scanner.
- Do not subject the scanner to abnormal impact while it is operating. This may cause defective readings.

# Connecting the Scanner to the Host Computer

Follow these steps to connect the scanner to a host computer.

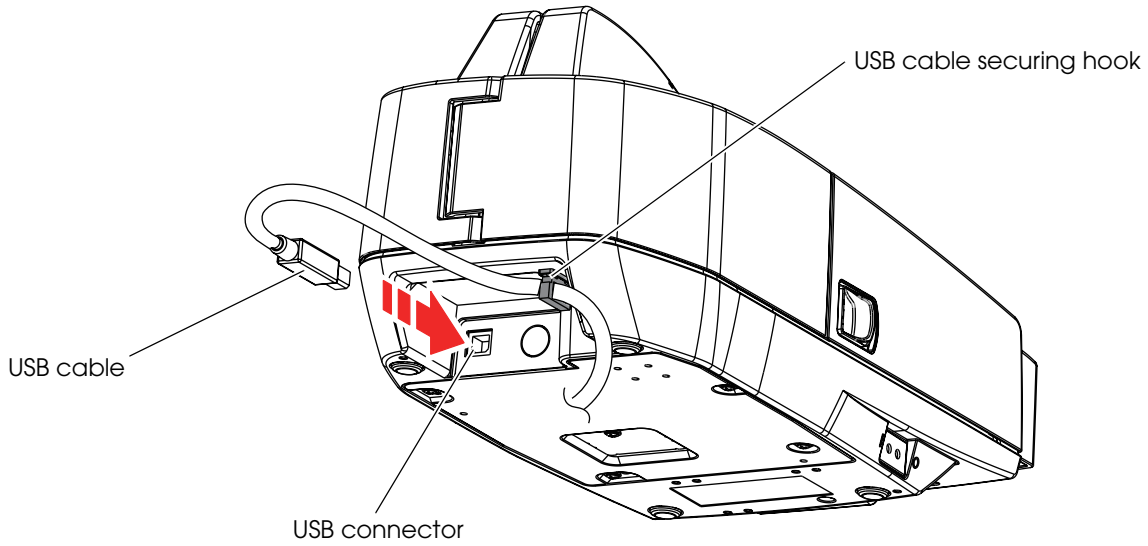
**1** Confirm that the scanner is not connected to the host computer.

**2** Install the TM-S1000 driver.

> **NOTE** If the scanner is connected to a host computer before the driver is installed, the Found New Hardware Wizard will be displayed. In that case, cancel the wizard and install the driver.

**3** After installing the driver, connect the scanner to the host computer via the USB cable.

> **CAUTION**
> - Be sure to use the USB cable that is included with the scanner.
> - Hook the USB cable on the USB cable securing hook as shown in the figure below to prevent the cable from falling off.



# Connecting the Power Supply Unit

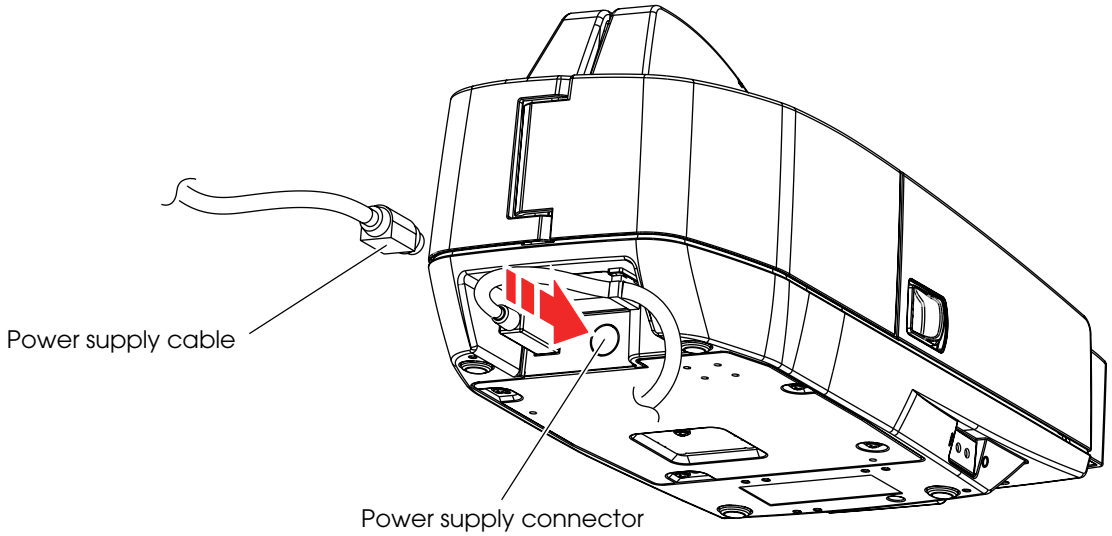
Use the AC adapter. C as the power supply unit.

**WARNING**

- **Always use the AC adapter. C as the power supply unit.**
  Using a nonstandard power supply can result in electric shock and fire.
- **Should a fault ever occur in the Epson AC adapter. C, immediately turn off the power to the scanner and remove the power supply cable from the wall socket.**

**1** Make sure the scanner's power supply is turned off and the power supply unit's power cable has been removed from the wall socket.

**2** Insert the connector of the power supply cable onto the power supply connector (stamped **24V**).




**CAUTION**

- **Be sure to remove the power supply unit's cable from the wall socket whenever connecting or disconnecting the power supply unit to the scanner.**
  Failure to do so may result in damage to the power supply unit or the scanner.
- **Make sure the wall socket power supply satisfies the rated voltage requirements of the power supply unit. Never insert the power supply cable plug into a socket that does not meet the rated voltage requirements of the power supply unit.**
  Doing so may result in damage to both the power supply and the scanner.

**CAUTION**

Before removing the DC cable connector from the AC adapter. C, make sure the power supply cable has been removed from the power supply unit; then grasp the arrow-marked section of the connector and pull straight out.

# Application Development Information

This chapter gives information useful for scanner application development.

## Software and Manuals

The following software and manuals are provided for application development.

| Software | Description | Manual |
|---|---|---|
| TM-S1000 API | This API controls various functions of the TM-S1000. Log files of API used by applications are helpful for troubleshooting. A silent installation is also available. Sample programs are provided. | TM-S1000 API Reference Guide<br>TM-S1000 .NET API Reference Guide |
| TM-S1000 Utility | Use to obtain internal information about the scanner and for maintenance. | TM-S1000 Utility User's Manual |

### Download

Software and manuals can be downloaded from the following URL.

http://www.epson-pos.com/

# TM-S1000 Utility

The TM-S1000 Utility is provided for analyzing the scanner and troubleshooting.

With the TM-S1000 Utility, you can check the operation of the scanner, confirm the scanner status, and perform MICR cleaning.

> **NOTE** For more information about the TM-S1000 Utility, see the TM-S1000 Utility User's manual.

## Functions of the Utility

You can use the following functions by running the TM-S1000 Utility.

### Obtaining information

- Get the internal information of the TM-S1000
  - Firmware version
  - Product serial number
  - Process speed (30/60 dpm)
  - Franker installed/not installed
  - Remote wakeup enabled/disabled
  - Others
- Get the USB descriptor (specification of a USB device) of the device
- Get the host PC information
  - OS version/language
  - TM-S1000 driver version
  - Installed .NET Framework
  - USB driver stack
  - CPU and memory information

### Save/Reading obtained information

- Save the obtained values in a file
- Read the obtained values from a file

### Operation check

- Scan and check the MICR character data
- Scan and check the photo data
- Check the paper feed test

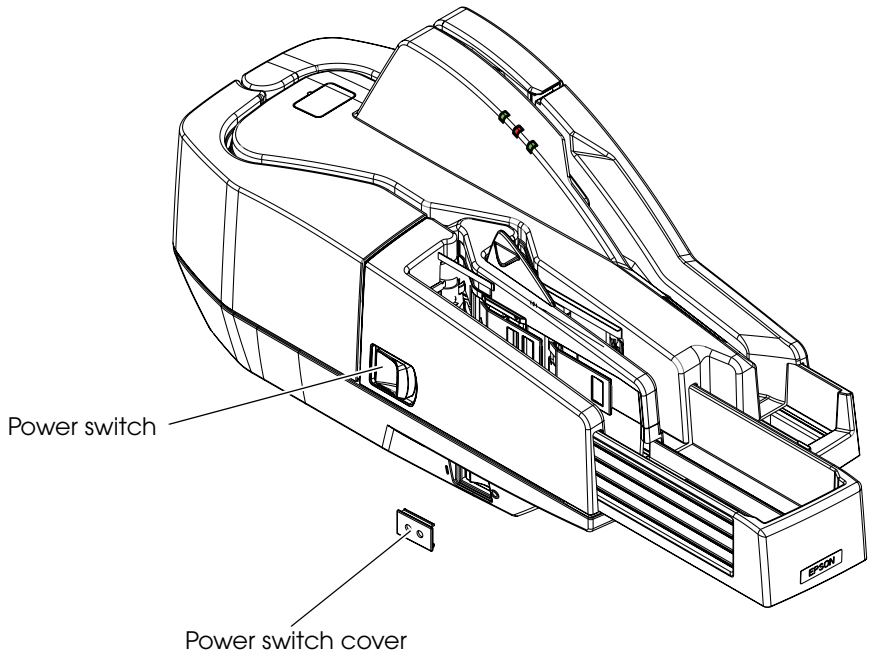
### Clean the MICR unit

# Handling

This chapter describes basic handling of the scanner.

## Turning On/Off

Press the power switch to turn the scanner on or off.




| NOTE | If the power switch cover is attached over the power switch, insert a pointed object into one of the holes of the cover to press the switch. |
|---|---|

# Opening the Covers

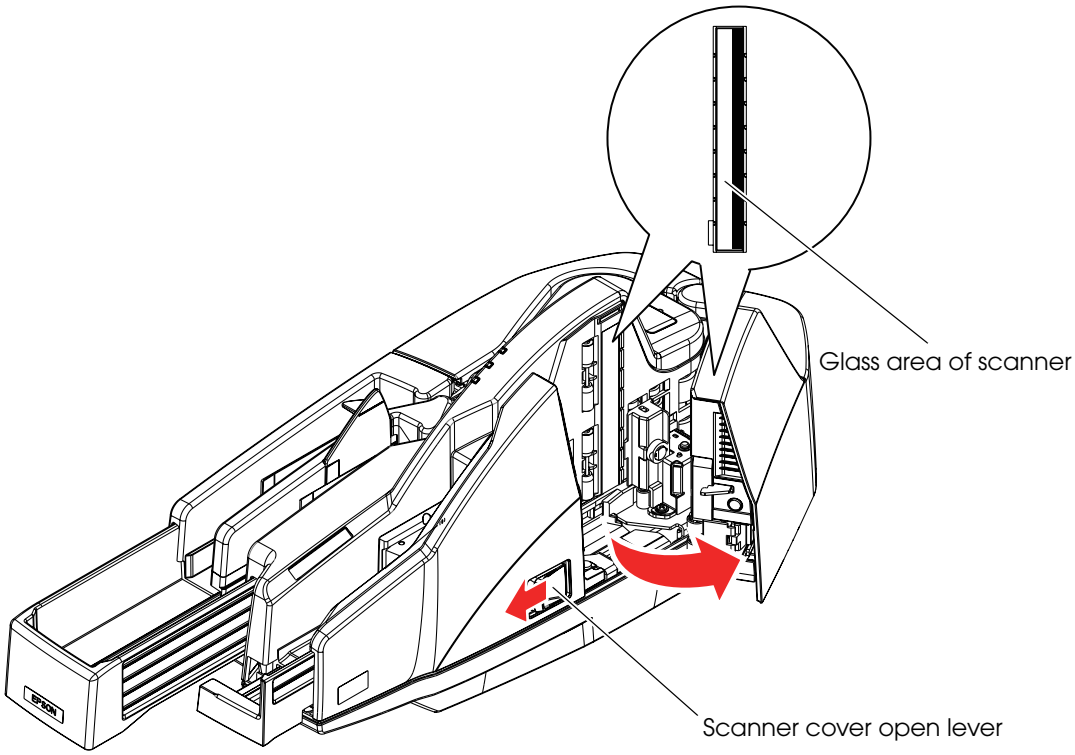
> **CAUTION** Do not open the covers during processing. Otherwise a scanning error, a MICR error, or a paper jam may result.

## Opening the Scanner Cover

Pull the scanner cover open lever to open the scanner cover.

Open the scanner cover when you clean the glass of the scanner (See "Cleaning the Image Scanner" on page 52.) or remove jammed paper (See "Removing a Paper Jam" on page 54.).

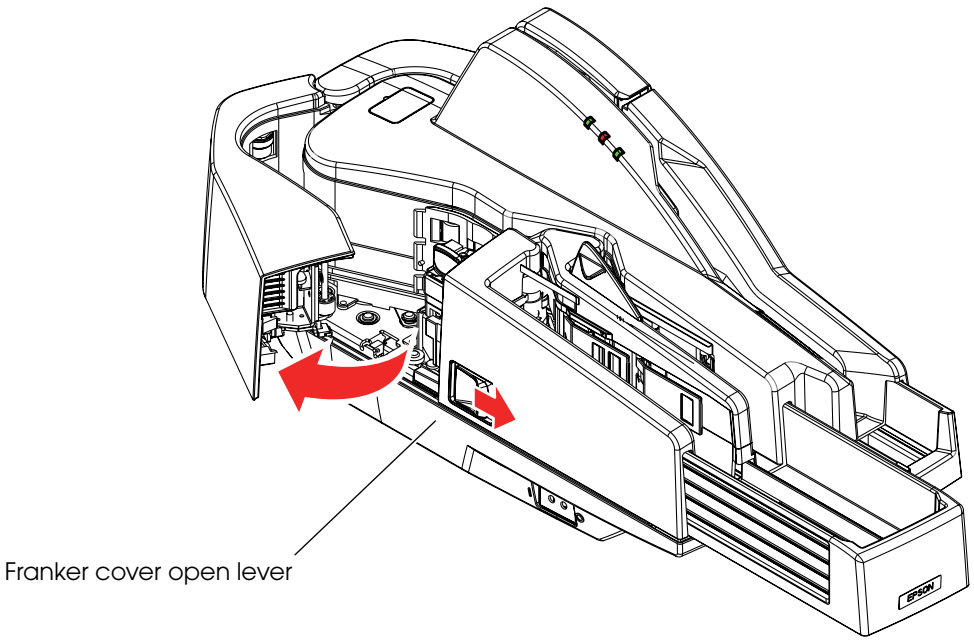
> **CAUTION** Do not touch the glass areas of the scanner inside the scanner cover with your bare hands.



## Opening the Franker Cover

Pull the franker cover open lever to open the franker lever.

Open the franker cover when you replace the franking cartridge with new one (See "Installing and Replacing the Franking Cartridge" on page 47.) or remove jammed paper (See "Removing a Paper Jam" on page 54.).



# Franking Cartridge

## Important Notes on the Franking Cartridge

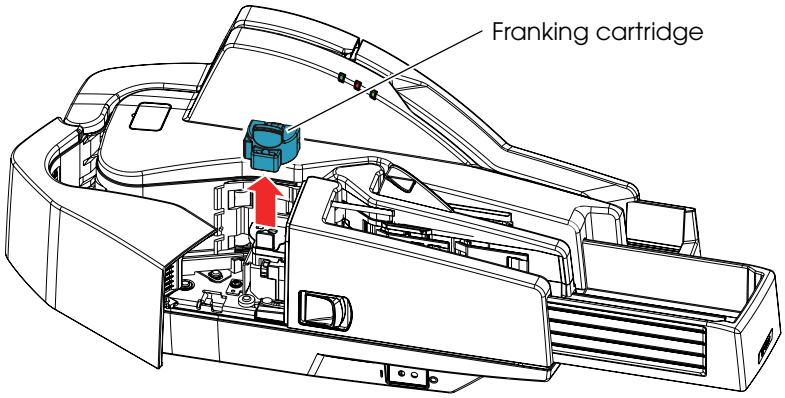
- Keep the franking cartridges out of the reach of children.
- Do not disassemble franking cartridges.
- Be careful during handling because the ink can permanently stain clothing.
- Seiko Epson recommends using genuine Epson cartridges for your scanner. Products of other manufacturers may adversely affect the scanner and printing quality, and may result in the scanner not being able to achieve the specified performance levels.
- Do not remove the franking cartridge from the packing box until immediately before its installation. Leaving the cartridge out of its packing for a prolonged period of time may adversely affect printing quality.
- Use up the franking cartridge within 18 months from the date of production indicated on the cartridge box.
- Dispose of the franking cartridge in accordance with any relevant national or local laws, ordinances, and regulations.

## Installing and Replacing the Franking Cartridge

Follow these steps to install a franking cartridge for the first time or to replace it.

1. Open the franker cover. (See "Opening the Franker Cover" on page 45.)

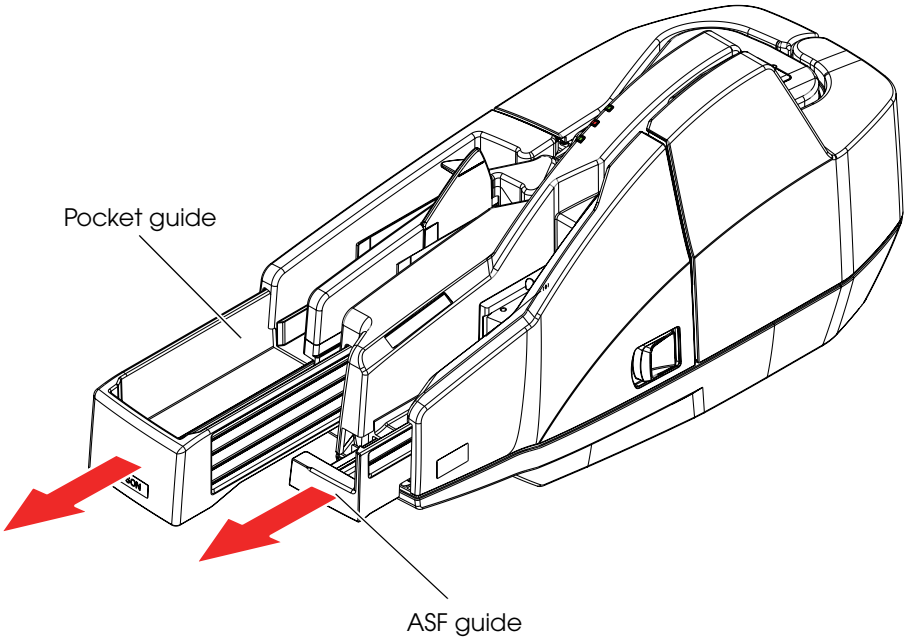
2. If a used franking cartridge is installed, hold the knob at the top of the cartridge and lift the cartridge out of the scanner.




3. Carefully insert a new franking cartridge from the top, and push it firmly but gently until it clicks in place.

4. Close the franker cover firmly until it clicks in place.

# Pulling Out the Guides




## Pocket Guide

**CAUTION** Be sure to pull out the pocket guide far enough to accommodate the documents stored in the guide before using the scanner. Otherwise a paper jam may occur.

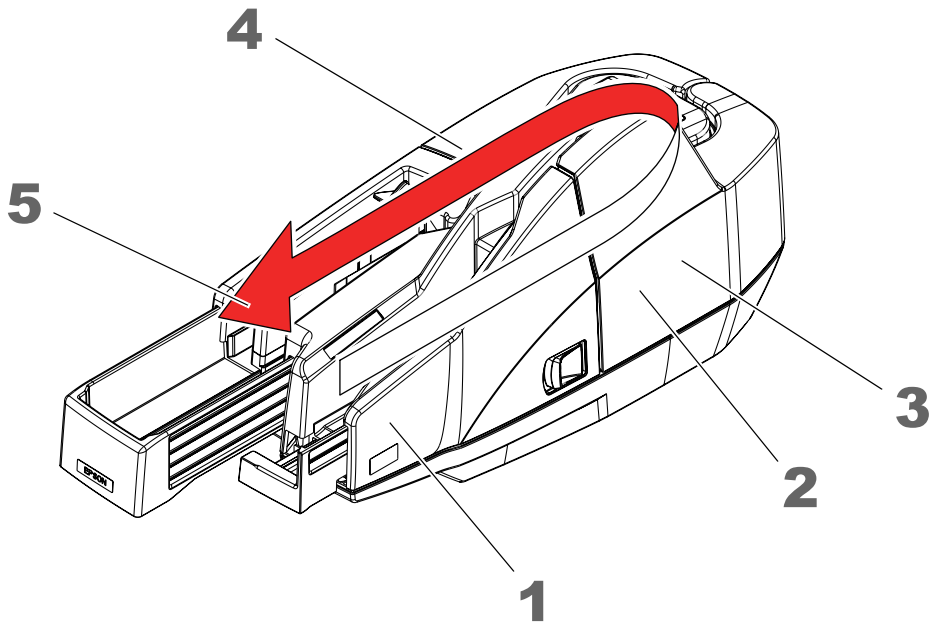
## ASF Guide

Feeding paper using the ASF guide allows you to insert documents straight. Pull out the ASF guide if necessary.

# Processing Documents

The TM-S1000 is capable of performing the following four actions on a document in a single pass: scanning the image of both the face and the back, reading magnetic characters, and franking.

## Flow of Single Pass Processing




1. Insert a document into the feeder section.
(See "Inserting Checks" on page 50.)
2. The scanner scans the images of the face and back.
3. The scanner reads the magnetic characters on the document.
4. The franking section prints a pattern.
5. The document is fed to the outlet.
(See "Ejecting Checks" on page 51.)

## Important Notes on Processing Documents

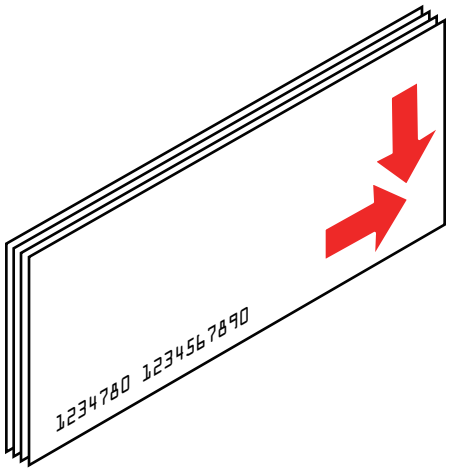
- Use paper that meets the scanner specification. (See "Paper Specifications" on page 32.)
- Do not use copy paper or other multi-ply paper.
- Make sure that the documents have no curl, bending (especially on the corners), warpage, or wrinkles.
- Do not use checks with paper clips, staples, adhesive tape, or other foreign materials attached.
- Be sure to let documents go as soon as the scanner starts feeding. Otherwise, there may be a paper skew, paper jam, or MICR reading error.
- Do not open the covers while processing is in progress.

## Inserting Checks

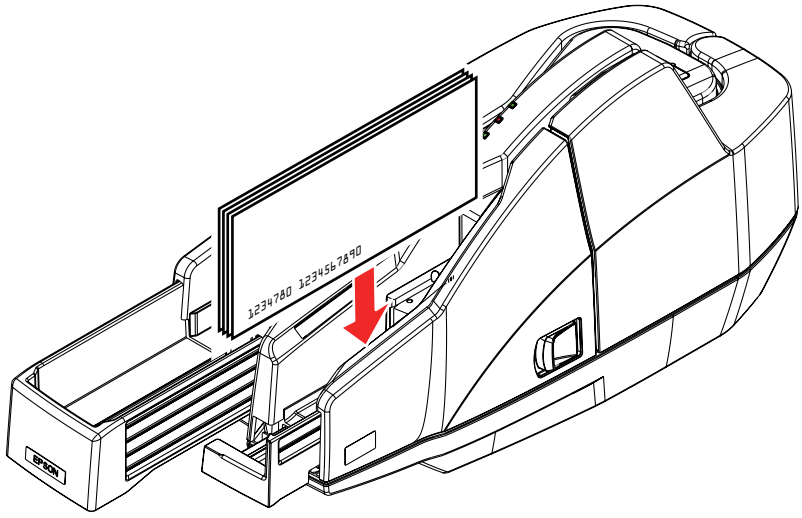
You can put up to 100 documents in the ASF to be fed automatically.

1 Align the documents neatly on the bottom-right corner as shown in the picture below so that they will be fed one by one.

| CAUTION | If the documents are inserted without being aligned, they may not be fed at all, or a paper jam or incorrect feeding of multiple documents may result. |
|---|---|



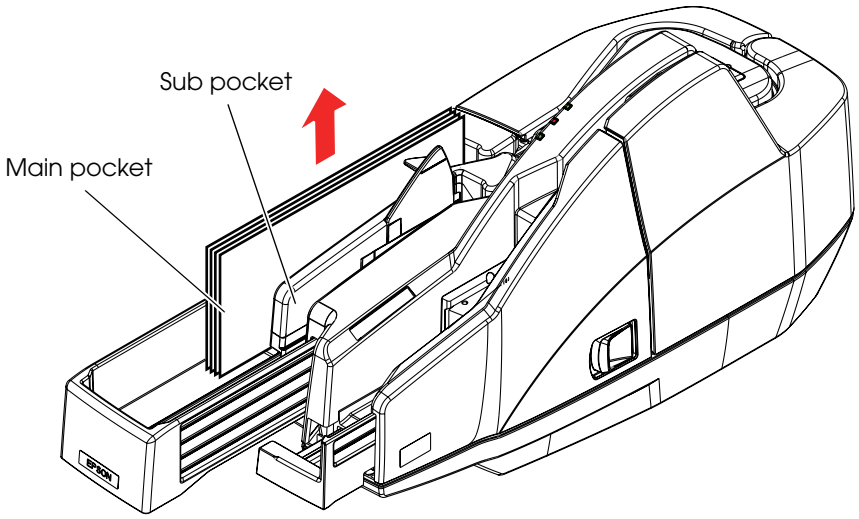
**2** Insert documents straight with their faces (the side on which magnetic characters are printed) facing outside, as shown in the picture below.



## Ejecting Checks

When the documents are ejected, remove the documents.

**CAUTION** Do not leave more than the specified number of documents in the pockets while processing documents (Main pocket: 100 sheets, sub pocket: 50 sheets). Otherwise, a paper jam may occur.




**NOTE**

- Some documents may be ejected into the sub pocket depending on your application.
- Buzzer may sound to notify errors depending on your application.

# Cleaning

## Cleaning the Image Scanner

If the glass of the scanner gets soiled from ink or paper dust, the quality of the image data may deteriorate. Clean the glass every 6 months or every 100,000 passes.

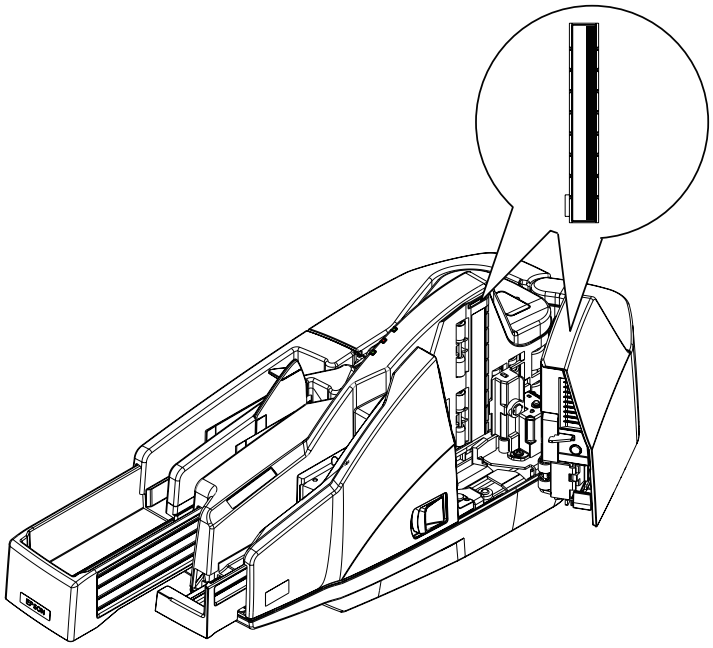
Follow these steps to clean the glass.

**1** Open the scanner cover.
(See "Opening the Scanner Cover" on page 44.)

**2** Lightly wipe the glass areas shown in the picture below with a soft, dry cloth.
When the glass of the scanner is smeared with oil, grease or other unremovable substance, wipe it with a cloth lightly dipped in alcohol.

**CAUTION**

- **Do not use synthetic detergent, benzine, water, or other liquid for cleaning.** Doing so may result in a stain.
- **Never apply any liquid directly to the glass of the scanner.**



**3** Close the scanner cover firmly until it clicks in place.

**NOTE**

It is recommended to clean the image scanner once per week or once every 2,000 checks for good reading results.

## Cleaning the MICR Unit

Dirt on the MICR unit may cause frequent magnetic character reading errors. Clean the MICR unit every 6 months or every 100,000 passes.

Use the TM-S1000 utility your application to clean the MICR unit.

Use a commercially available cleaning sheet.

**CAUTION**

- **Do not use sticky cleaning sheets.**
  They may cause a paper jam or machine failure.
- **Be sure to dispose of used cleaning sheets.**

**NOTE**

- For detailed information on cleaning procedures, see the manuals for the self-test tool or your application.
- It is recommended to clean the MICR unit once per week or once every 2,000 checks for good reading results.
- It is recommended to clean the image scanner after cleaning the MICR unit.
  (See "Cleaning the Image Scanner" on page 52)

# Removing a Paper Jam

Open the scanner cover or franker cover to remove the jammed paper. (See "Opening the Scanner Cover" on page 44 and "Opening the Franker Cover" on page 45.)

# Preparing for Transport

Follow the steps below to transport the scanner.

1. Turn off the scanner.
2. Confirm that ⏻ POWER LED is off.
3. Remove the power supply connector.
4. Store the pocket guide and the ASF guide inside the scanner.
5. Pack the scanner upright.