EXCELLA STX
MICR CHECK READER
AND DUAL-SIDED SCANNER
INSTALLATION AND OPERATION MANUAL

Manual Part Number: 99875342-1

MARCH 2006

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Rev Number	Date	Notes
1	30 Mar 06	Initial Release

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Agency approvals are pending:

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC COMPLIANCE STATEMENT

This device complies with Part 15 Of The FCC Rules. Operation of this device is subject to the following two conditions: (1) This device may not cause harmful interference. And (2) This device must accept any interference received, including interference that may cause undesired operation.

CANADIAN DOC STATEMENT

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de las classe A prescrites dans le Réglement sur le brouillage radioélectrique édicté par les ministère des Communications du Canada.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numériqué de la classe A est conformé à la norme NMB-003 du Canada.

CE STANDARDS

Testing for compliance to CE was performed by an independent laboratory. The unit under test was found compliant to Class A.

UL/CSA

This product is listed per Underwriter Laboratories and Canadian Underwriter Laboratories 1950.

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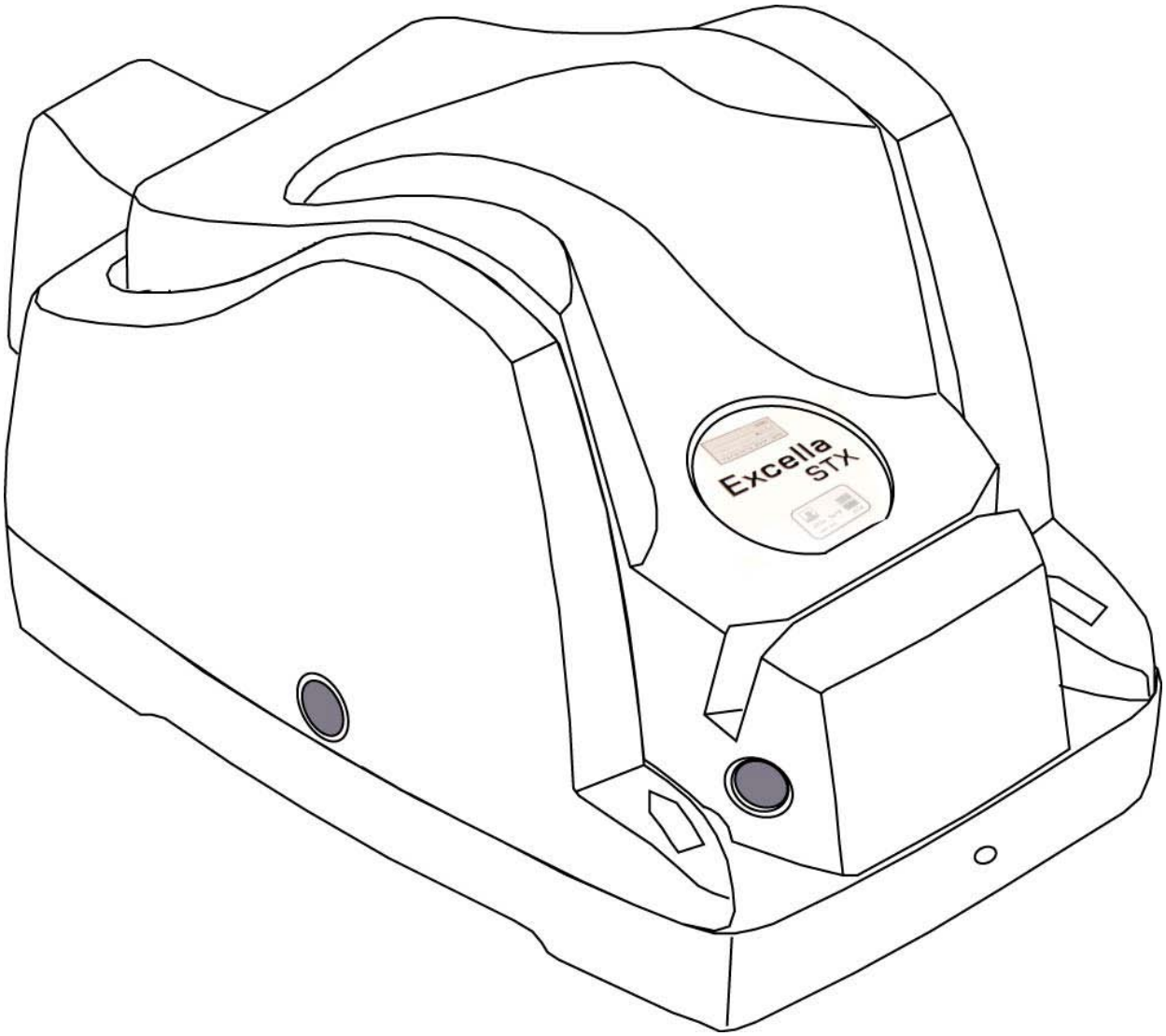


Figure 1-1. Excella STX

SECTION 1. FEATURES AND SPECIFICATIONS

The Excella STX™ Check Reader is a MICR check reader (Magnetic Ink Character Recognition) and dual-sided scanner with endorsement printer. The Excella STX is a single transaction Check Reader; one check is entered into the Excella STX at a time. The Excella STX reads the MICR character set (E13B or CMC7 fonts) on the front face and bottom of a check and scans both sides of the check in a single pass, producing high-quality, grayscale or black/white images (color images are offered as an option) in the most common file formats used in the industry. The characters and the image are then transmitted to a Host device.

Excella STX will communicate with the Host system using a USB 2.0 or Ethernet interface.

CONFIGURATIONS

The current configuration is as follows:

Part Number	Description
22350001	MICR EXCELLA STX USB/ETH COLR MSR FPRT BPRT
22350002	MICR EXCELLA STX USB/ETH COLR MSR FPRT BPRT W/DEV KIT
22350003	MICR EXCELLA STX USB/ETH GRAY MSR
22350004	MICR EXCELLA STX USB/ETH GRAY FPRT BPRT
22350005	MICR EXCELLA STX USB/ETH GRAY MSR FPRT BPRT
22350006	MICR EXCELLA STX USB/ETH GRAY FPRT
22350007	MICR EXCELLA STX USB/ETH GRAY BPRT

REQUIREMENTS

The following items are required for the Installation:

- Excella STX, Check Reader and Dual-Sided Scanner
- USB Interface Cable (P/N 22350300) or
- Ethernet Interface Cable (P/N 22350302)
- Power Supply, 24 VDC Regulated, Switcher, 5.5 x 2.1 mm, Right Angle Plug, P/N 64300098
- API/Demo software CD

FEATURES

The following is a list of features of the Excella Reader:

- Check Reader Reads E13B and CMC7 MICR fonts
- Captures front and back images of check in a single pass
- Optional printers print horizontal message on front or back of the check

- Printed messages are programmable
- Message height: 1/8” consisting of 12 pixels
- Resolution: 200 dpi (scaling to 100 dpi); black/white and grayscale images
- Image compression: CCITT G4 or JPEG
- Image files: TIFF 6.0, JFIF with EXIF tags, BMP
- Manual feed - single check
- USB 2.0 High Speed (USB 1.1 compatible)
- Ethernet 10/100 Base-T
- Smart cable management
- Magnetic Stripe Reader with MagnePrint™

ACCESSORIES

Accessories available for the Excella Reader include the following:

STX accessories P/N listing	Description
22350300	COM USB 2.0 A-B BLK 6’
22350301	COM USB 2.0 A-B BLK 10’
22350302	COM ETHERNET CAT5E BLK 10’
22350303	COM ETHERNET CAT5E GRAY XOVER 10’
93600132	COM PRINTER PART,HP C6602A INKJET CARTRIDGE BLK
64300098	PWR SUP 24VDC REG SW 5.5X2.1MM R/A PLG,3WR AC
71100001	CBL POWER CORD-AC, US 18/3 10A SVT 7’ BLK
22359069	DEMO SOFTWARE
965300XX	Sample Checks, Pack of 5
97200033	Cleaning Swabs

SPECIFICATIONS

The specifications for the STX are listed in Table 1-1.

Table 1-1. Specifications

OPERATING	
Check Reader	
Reference Standards	ANSI X9.27
Power Input	24 VDC, 2.5 Amps
Document Size	4”x 8.5” Maximum
Printer/Cartridge Image Resolution: Image compression:	 200 dpi (scaling to 100 dpi); Black/white and grayscale images (color images are offered as an option) CCITT G4 or JPEG
Check Feed:	Manual feed of a single check
MICR fonts supported	E13-B CMC-7
Interface Options	RS-232, USB 2.0, USB 1.1 compatible Ethernet 100 Base-T,
Magnetic Stripe Reader	
Reference Standards	ISO 7810 and ISO 7811/ AAMVA*
Message Format	ASCII
Card Speed	4 to 60 ips (10.1 to 152.4 cm/s)
MECHANICAL	
Dimensions	L 13 ¼ inches x W 7 ½ inches; H 7 inches
Weight	3.59 lbs.

*ISO (International Standards Organization) and AAMVA (American Association of Motor Vehicle Administrators).

SECTION 2. INSTALLATION

This section describes the Installation of the Excella STX.

INSTALLATION SUMMARY

A summary of the major installation steps for Excella STX follows:

1. Unpack Excella STX
2. Remove two covers and install 2 ink cartridges (the cartridges are shipped uninstalled)
3. Install Excella STX API/Demo software (CD provided by MagTek)
4. Connect interface cable (USB or Ethernet) and power cable to Excella STX
5. Connect power cord to AC wall outlet
6. Connect interface cable to PC
7. When using the USB interface, run the "ExcellaUSBConfig" utility (see Appendix B) to establish a connection between the PC and Excella STX.

COVER REMOVAL

Two covers must be removed before the two **Printer/Cartridges** can be installed. Proceed as follows:

Outer Cover Removal

To remove the **Outer Cover**, perform the following:

1. Using both hands, place two index fingers on the release buttons and two thumbs on the inner race of the **Outer Cover** as shown in Figure 2-1. (The left **Release Button** is shown; the Right **Release Button** is directly opposite.)

2. As indicated in the illustration, press the two **Release Buttons** in, and at the same time slightly pull the two inner race segments out until the cover detaches.

3. Lift the **Outer Cover** to remove it from the assembly.

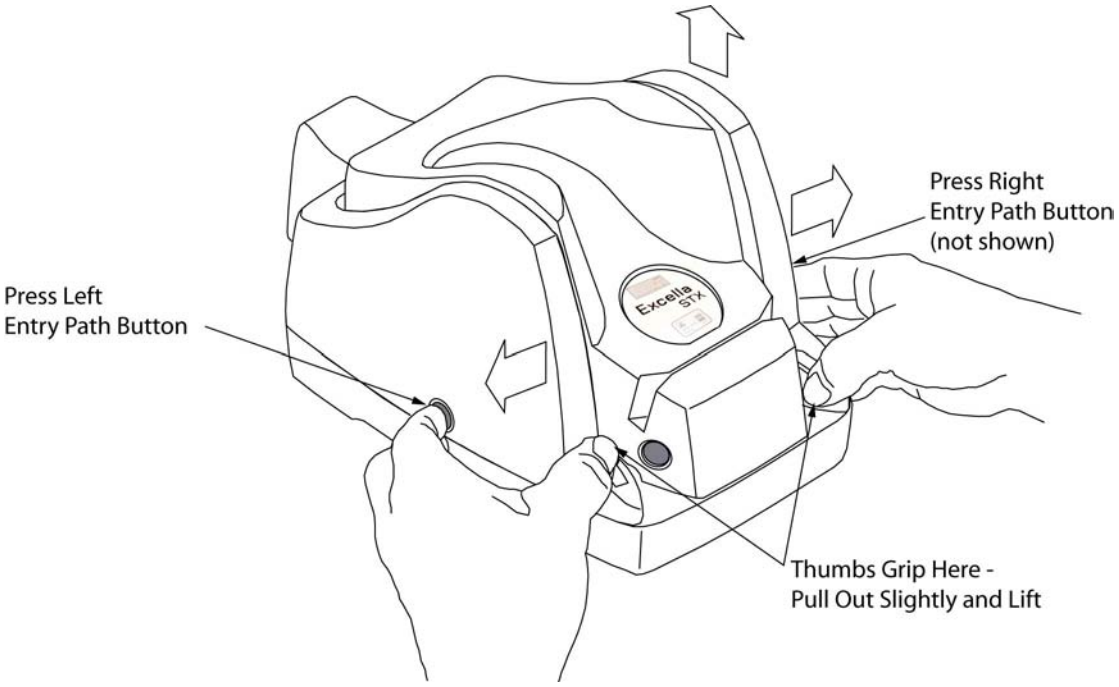


Figure 2-1. Outer Cover Removal

Center Cover Removal

To remove the **Center Cover**, perform the following:

1. Place the right-hand thumb and index finger on the front **Release Buttons** as indicated in Figure 2-2.

2. Place the index finger on the rear **Release Button** (not shown) as indicated in the illustration. (The location of the rear **Release Button** is shown in Figure 2-3.)

3. Press all three buttons and lift the cover at the same time until the cover detaches.

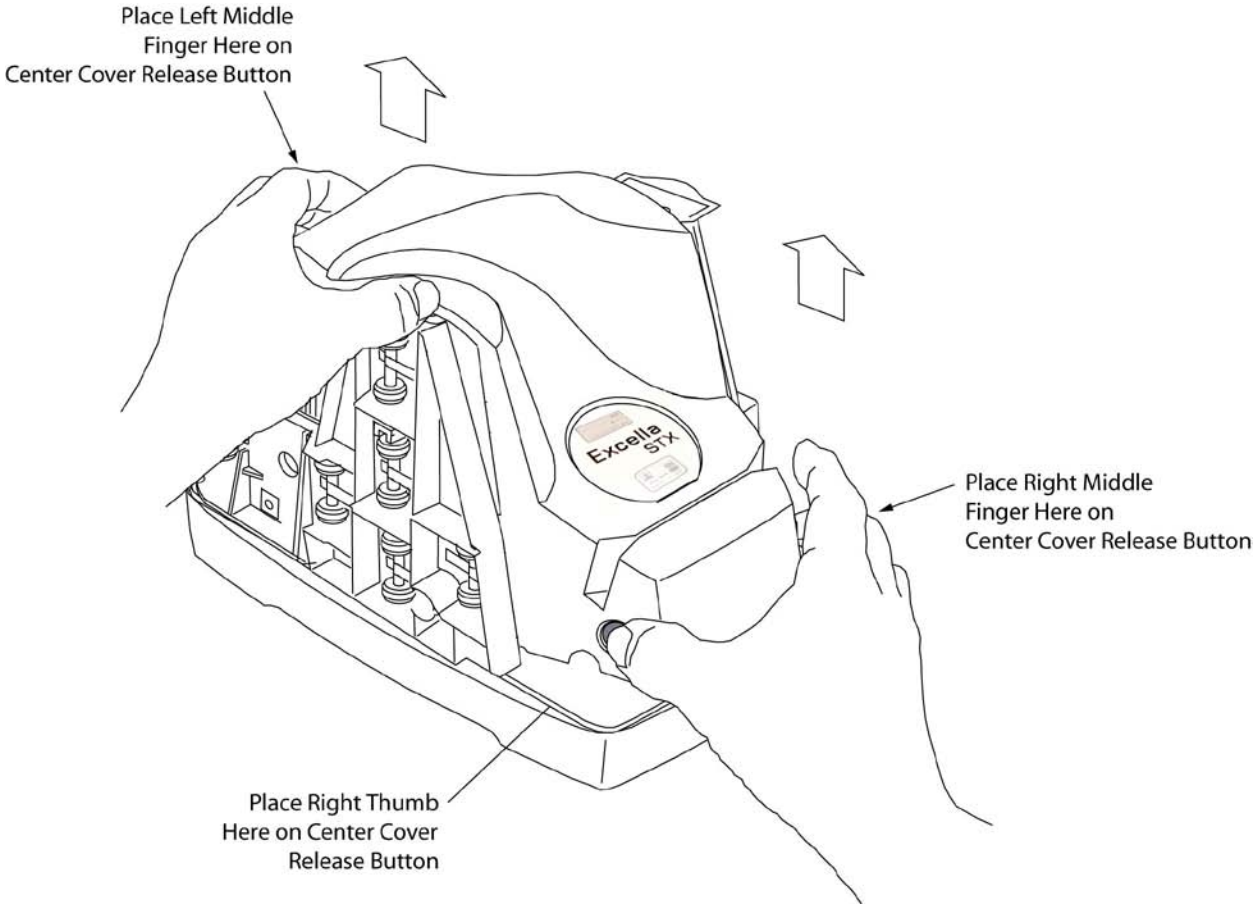


Figure 2-2. Center Cover Removal

PRINTER/CARTRIDGE INSTALLATION AND REMOVAL

Printer/Cartridge Installation

To install the **Printer/Cartridge**, refer to Figure 2-4 and perform the following:

1. Ensure the printer latch is down and locate the guide pins on the **Printer/Cartridge** and the guide holes in the Printer Base (Inset).

2. Slide the guide pegs into the guide holes as indicted in Figure 2-4.

3. Raise the latch so that it touches the **Printer/Cartridge**.

4. Press the latch into the lock position, and move the Cartridge slightly to ensure it is locked.

5. Perform steps 1 through 4 on the other Printer/Cartridge located inside of the exit path.

To remove the Cartridge, pull the latch down, and slide the Cartridge out.

Caution

*Ensure both latches are up before installing either or both covers, no matter if the **Printer/Cartridges** are installed or not.*

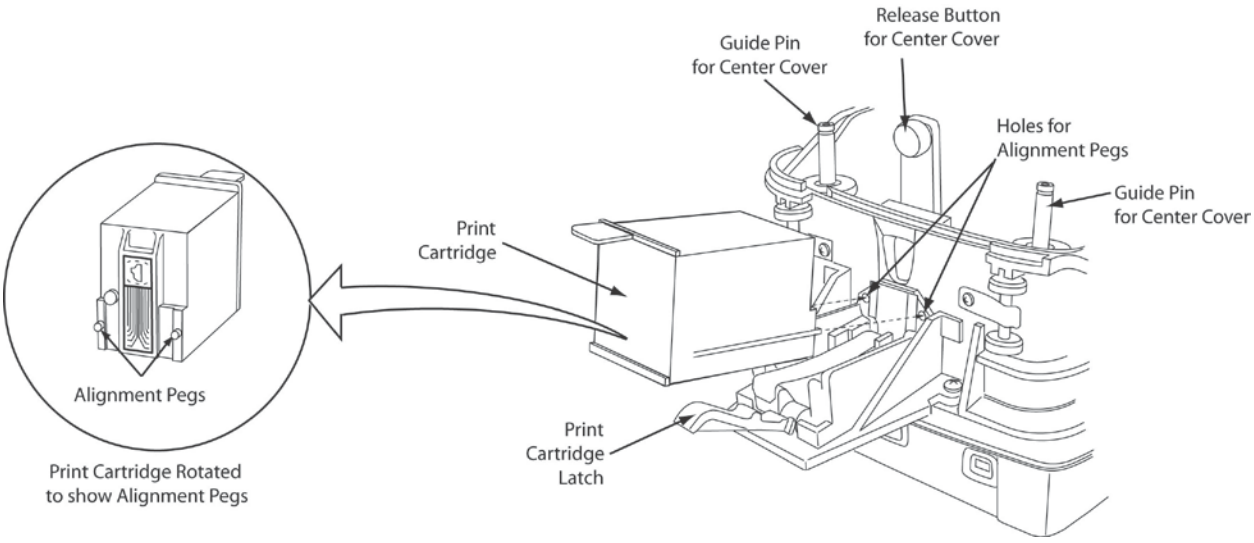


Figure 2-4. Printer/Cartridge Installation and Removal

Center Cover Replacement

To replace the **Center Cover**, refer to Figures 2-2 and 2-3.

1. Tilt the front of the Cover up, and use the two guide pins, Figure 2-3 , near the rear of the unit to orient the Cover.

2. Place the guide holes over the pins and slowly lower the front of the Cover so the pins slide into the holes in the Cover and the front of the Cover latches.

Outer Cover Replacement

1. Place two index fingers on the **Release Buttons** and two thumbs on the inner race of the **Outer Cover** as shown in Figure 2-1.

2. As indicated in Figure 2-1, press the two **Release Buttons** in, and at the same time slightly pull the two inner race segments out.

3. Ensure the four brackets at the base remain inside the **Outer Cover,** and slowly lower the **Outer Cover** until it clicks into the locked position.

CABLE CONNECTIONS

The cable connections are shown in Figure 2-5.

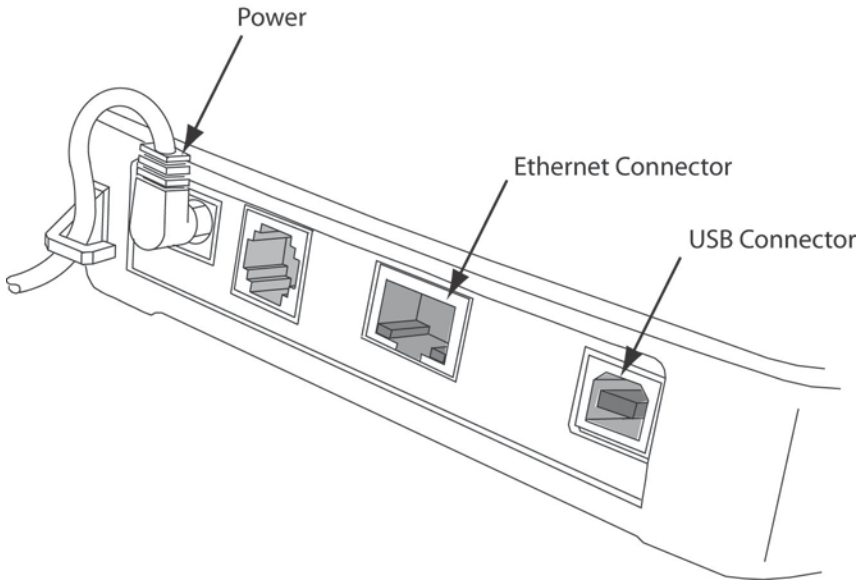


Figure 2-5. Cable Connections

CABLING

Cabling for Power Supply and Cords is as shown in Figure 2-6.

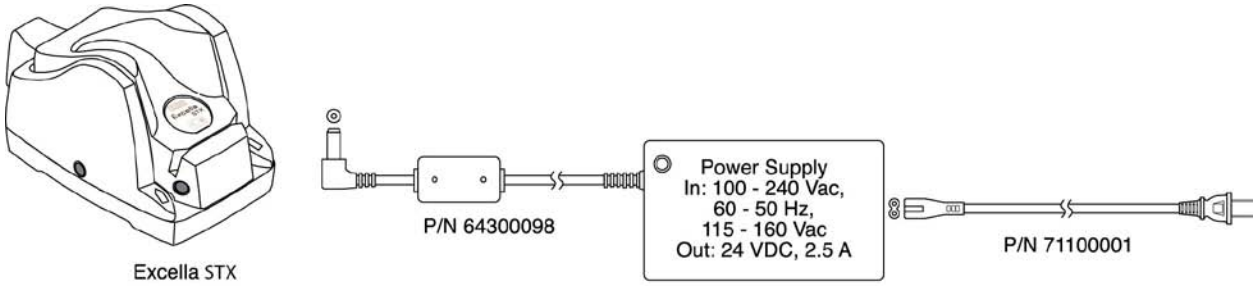


Figure 2-6. Power Supply and Cords. P/N 64300098 and 71100001

The Cabling for the USB cable 22350300 is as shown in Figure 2-7.

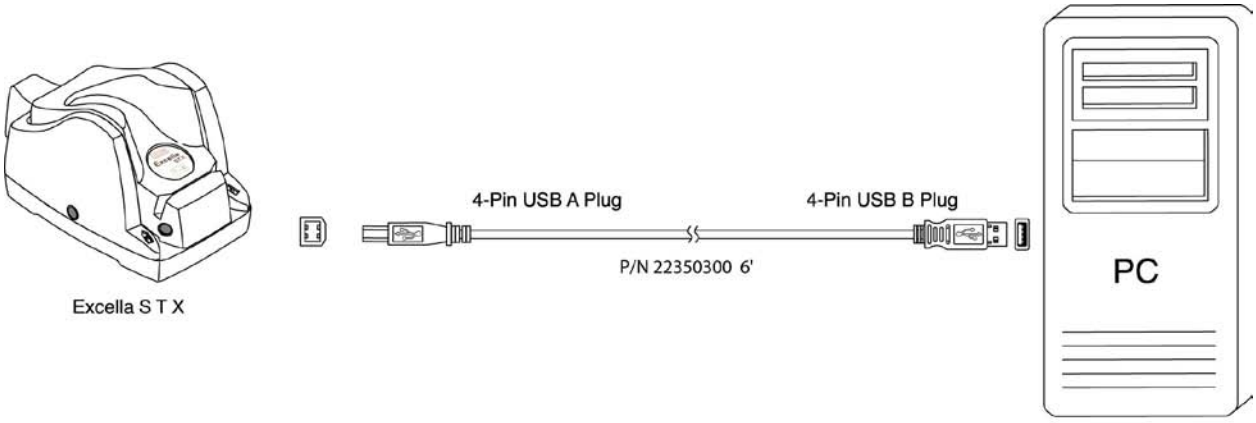


Figure 2-7. Cabling, USB, 4-pin, P/N 22350300

Cabling for the Ethernet P/N22350302 is shown in Figure 2-8.

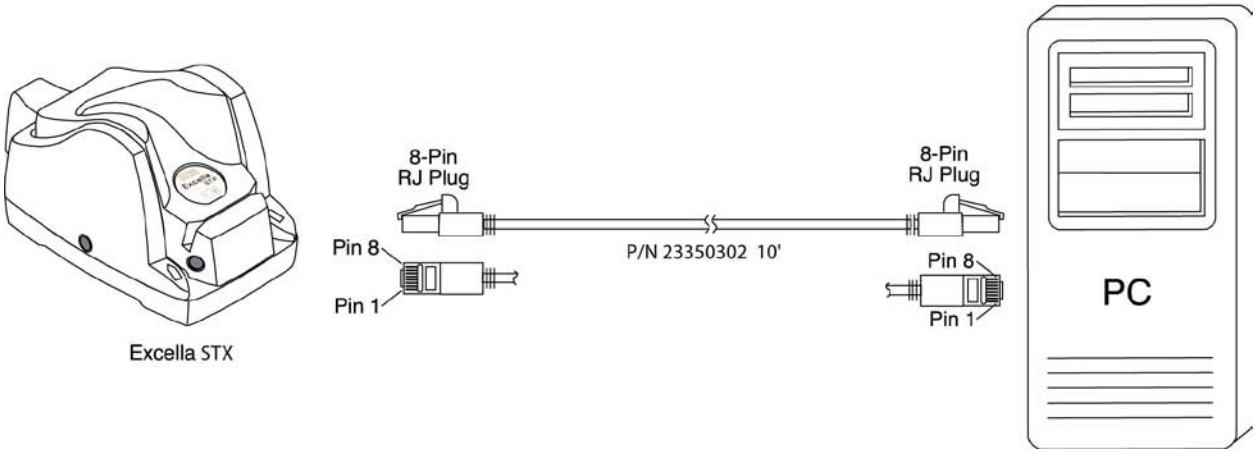


Figure 2-8. Cabling, Ethernet P/N22350302

SECTION 3. OPERATION AND MAINTENANCE

This section contains powering, operating, and maintenance procedures. Ensure the Excella is installed and cabling and power are connected as described in Section 2.

POWER UP

Plug the power supply, P/N 64300098P/N, and cord 71100001, into wall power, and press the start button. The green LED in the middle of the unit should light.

OPERATION

Check Insertion

Enter checks (one check at a time) as indicated in Figure 3-1. The left entry port light will blink when a check is requested.

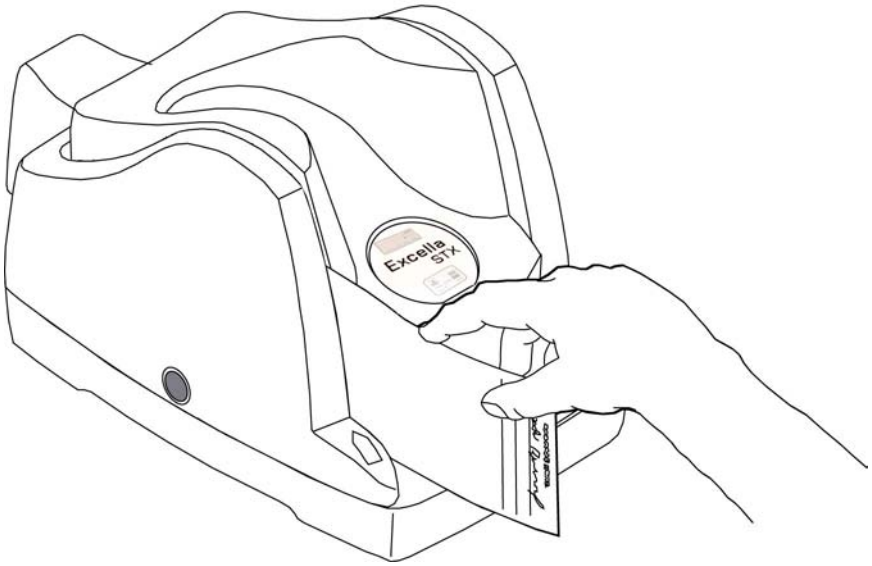


Figure 3-1. Position for Holding and Entering Check

ID Card Insertion

Enter ID cards for scanning with the front of the card facing the scan bar, as shown in Figure 3-2. The right exit port will flash when the ID card is requested.

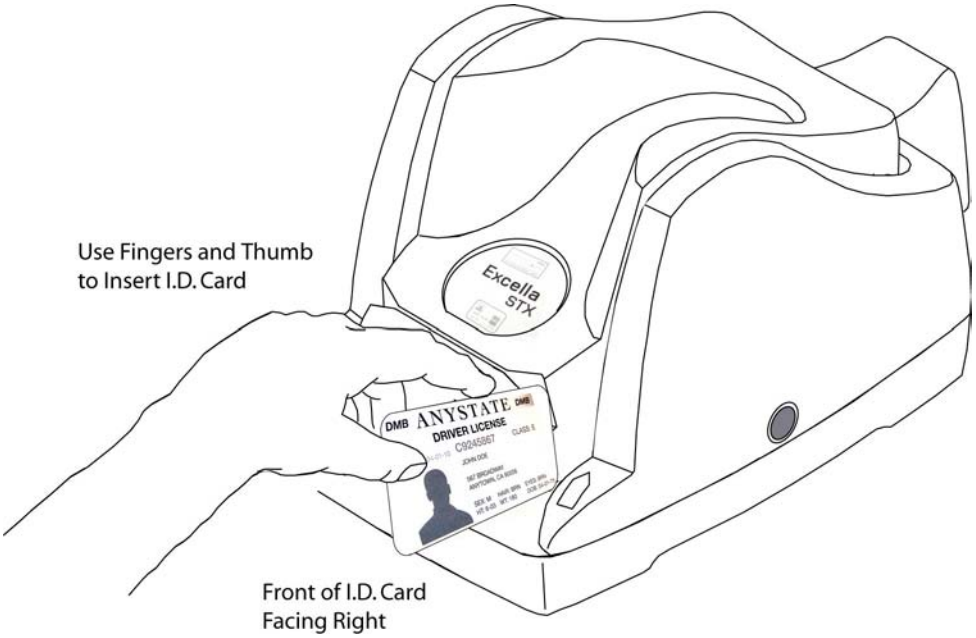
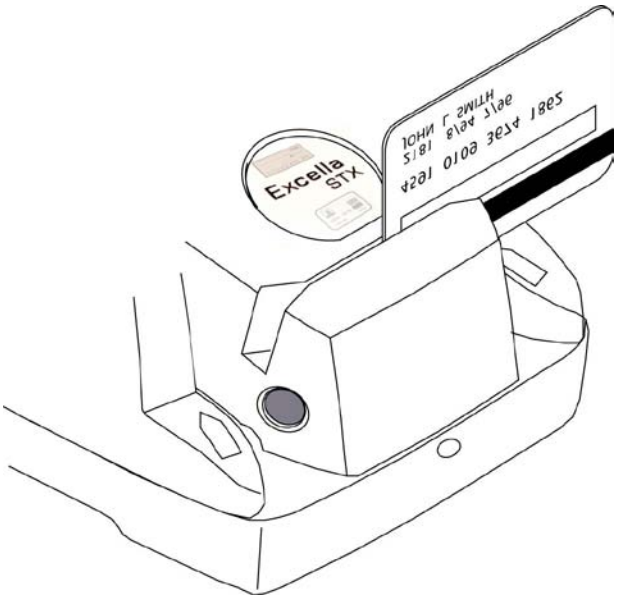


Figure 3-2. Position for Holding and Entering ID Card

Magnetic Swipe Reader



Note: The card may be swiped in either direction.

Figure3-3. MSR Card Insertion

The location LED indicators are shown in Figure 3-4, and the descriptions are in Table 3-1.

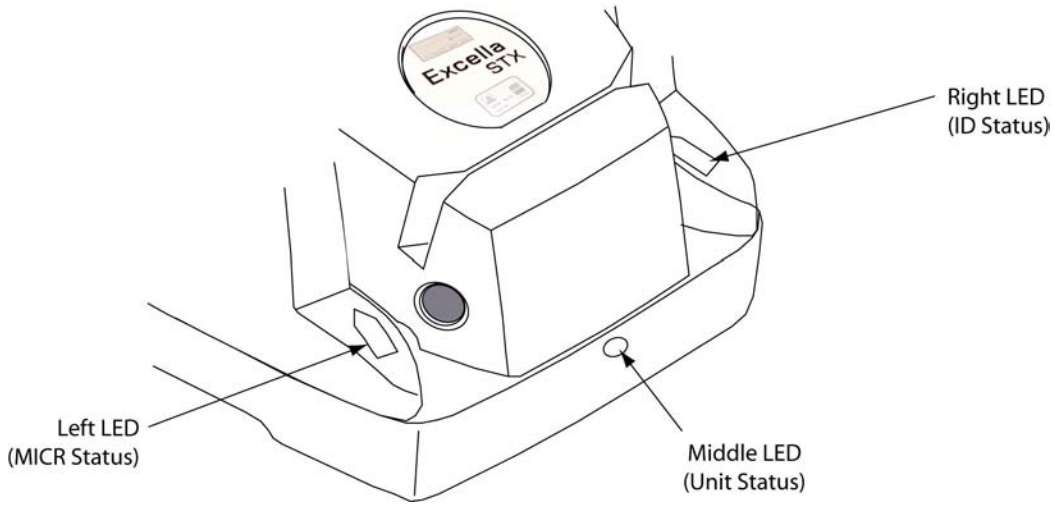


Figure 3-4. Location of LED Indicators

Table 3-1. Description of LEDs

Middle LED (Unit Status)	**Description**
Steady Green	Power on, everything is OK
Slow Blink Amber	Cover open
Fast Blink Red	Doc jammed. Path not clear
Middle LED (MSR Status)	
Slow Blink Green	Swipe card in MSR
Steady Read	Card read error
Fast Blink Green	Card read ok
Left LED (MICR status)	
Blinking Green	Feed check
Steady Red	MICR error
Right LED (ID Card Status)	
Blinking Green	Feed ID card

MAINTENANCE

Printer/Cartridge Cleaning

The Installation and Removal of the Printer/Cartridges are shown and described in Section 2. Installation. Clean the **Printer/Cartridge** as follows:

The **Printer**/**Cartridges** should be taken out when cleaned. See Section 2, Printer/Cartridge Installation and Removal.

There are two methods of cleaning the nozzles on the **Printer/Cartridges**, dry wiping and damp wiping. Use the dry wiping method first, and if more cleaning is required, use the damp wiping method. Figure 3-5 shows the Ink Cartridge.

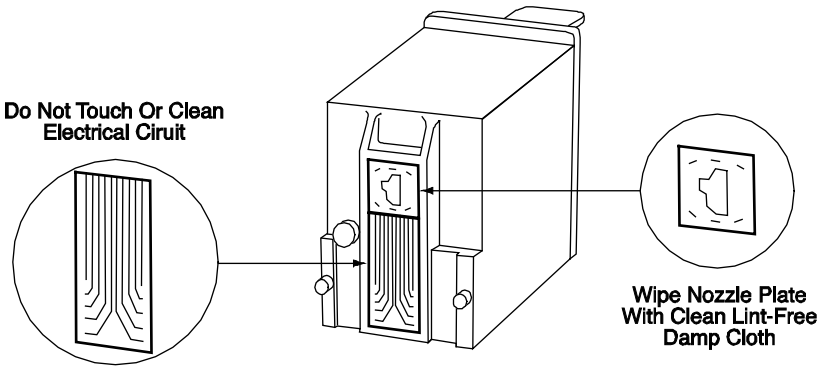


Figure 3-5. Cleaning the Ink Cartridge

Dry Wiping Nozzles

Gently wipe the nozzle plate area with a clean, lint-free cloth.

Caution

Do not wipe ink over the electrical contact area.

Damp Wiping Nozzles

Perform the following steps:

1. Dampen a clean, lint-free cloth with water.

2. Hold the dampened cloth or tissue in contact with the nozzles for a few seconds.

3. Then gently wipe the nozzle plate.

Caution

Do not wipe the electrical contact area.

4. If ink remains on the nozzle plate, wipe again with a clean dry cloth.

Scan Bar Cleaning

With the Outer and Center Covers removed, locate the **Hinged Roller Tower** and the **Scanning Tower**. Open the Towers as indicted in Figure 3-6 and Figure 3-7 and perform the following steps:

1. On the Entry side, pull the Tab up and the **Hinged Roller Tower** down (to the left).

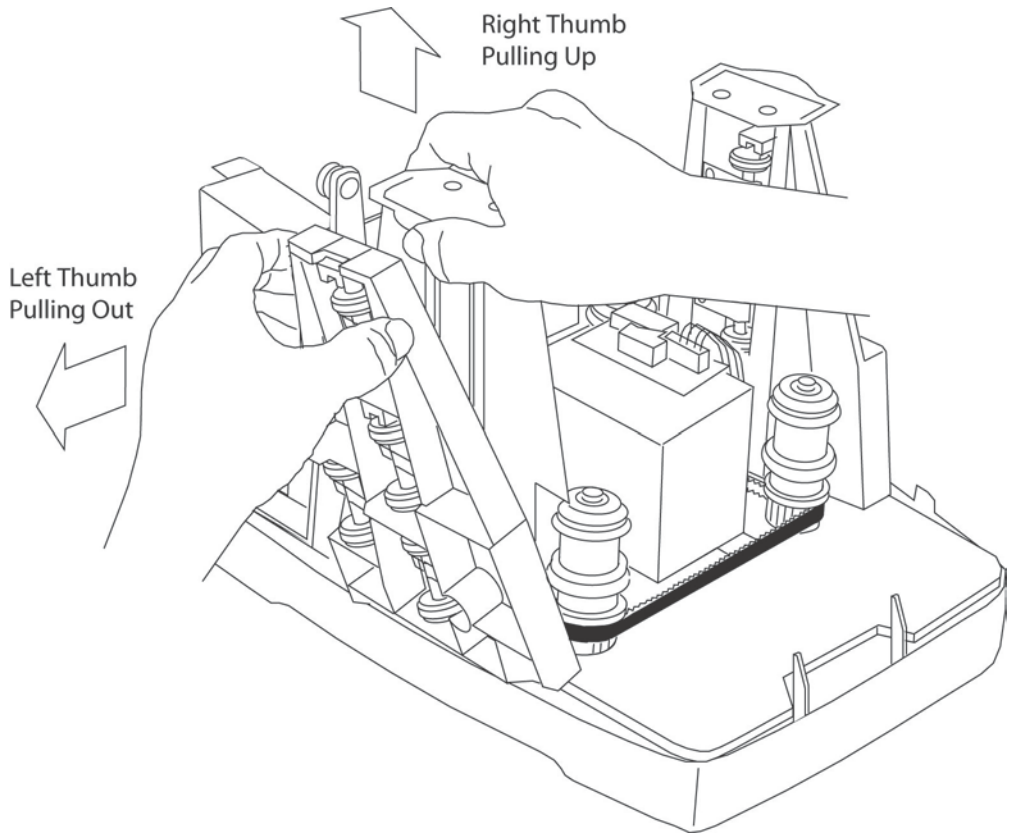


Figure 3-6. Opening Left Scan Bar

2. On the Exit side, pull the Tab up and the **Scan Bar Tower** down (to the right).

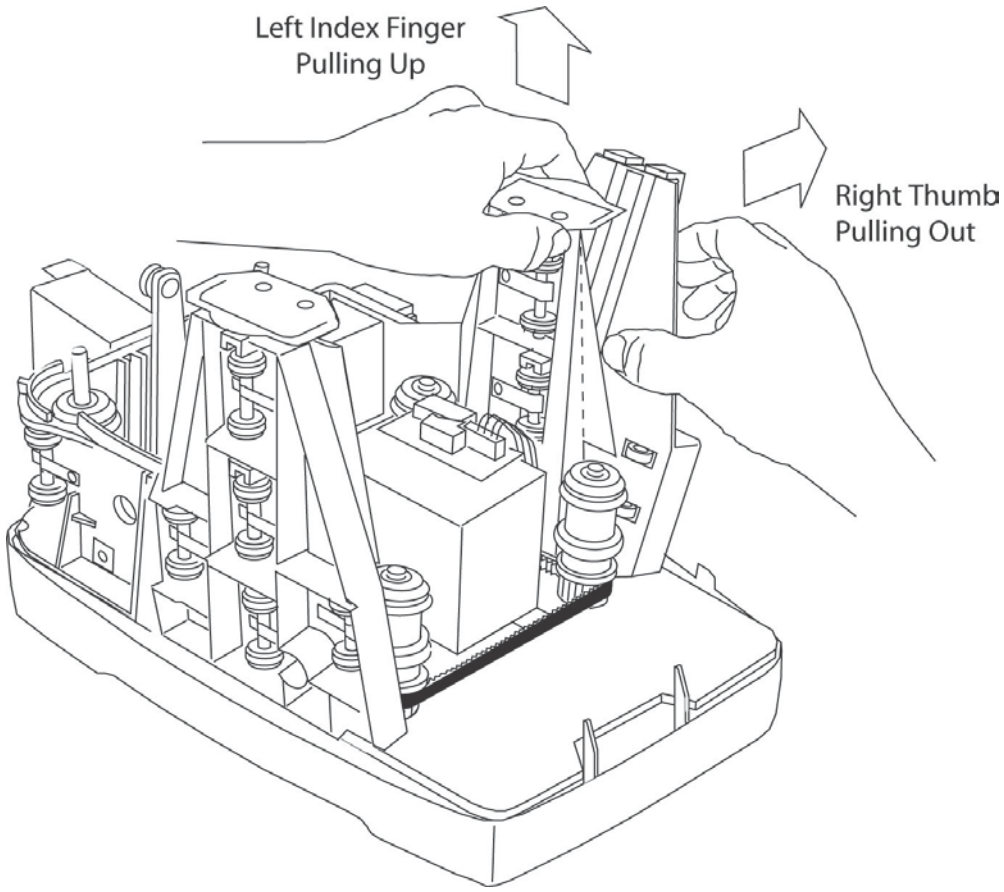


Figure 3-7. Opening Right Scan Bar

3 Clean each **Scan Bar** with Cleaning Swab, P/N 97200078, as shown in Figure 3-8.

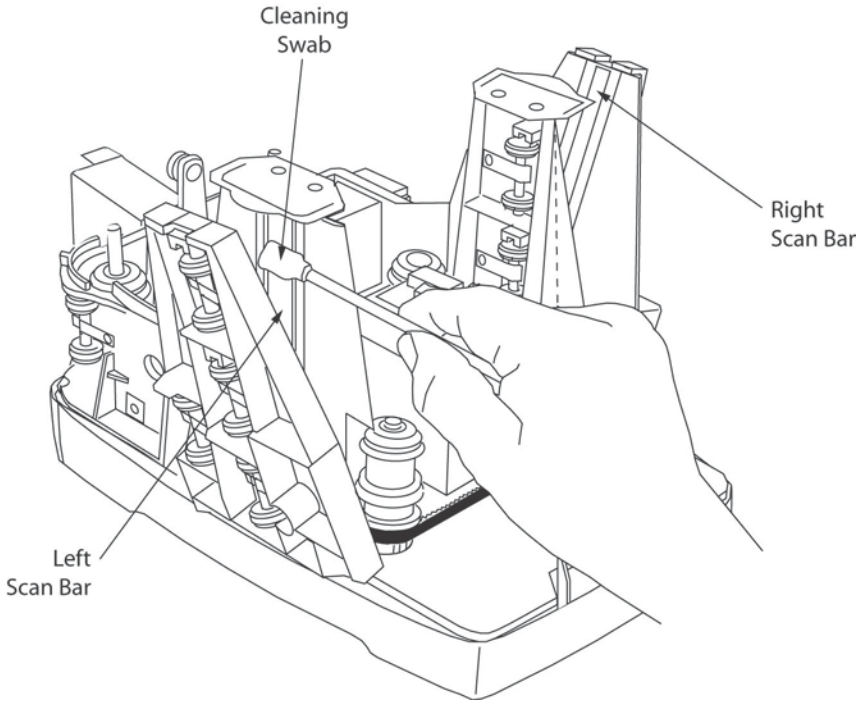


Figure 3-8. Cleaning the Scan Bars

Card and Check Path Cleaning

Remove the Outside and Center Covers and open the Scan Bars as previously described. Remove larger debris, such as jammed checks or cards from the check and card paths. For finer particles, use compressed air in a can that is commonly used to clean computer keyboards and PC components. Spray the dust and loose particles from the check and card paths. Compressed air in a can may be purchased at any PC retail store.

APPENDIX A. BUILT-IN WEB PAGE

OVERVIEW

Excella STX is a web appliance and it offers several functions and features in a built-in Web page accessible through a Web browser. For example, if Excella STX's active device IP address is 192.168.160.2, type the "http://192.168.160.2" in your web browser to access Excella STX's web page.

This appendix provides a general description of the Web page and the available functions and features.

STATUS

The Status Page, Figure A-1, provides device information plus operational statistics.

Figure A-1. Excella STX Status Page

MAINTENANCE

The Maintenance Page, Figure A-2, provides status and counters that can be useful to define maintenance service programs for Excella STX. Also, the device's clock can be set on this page.

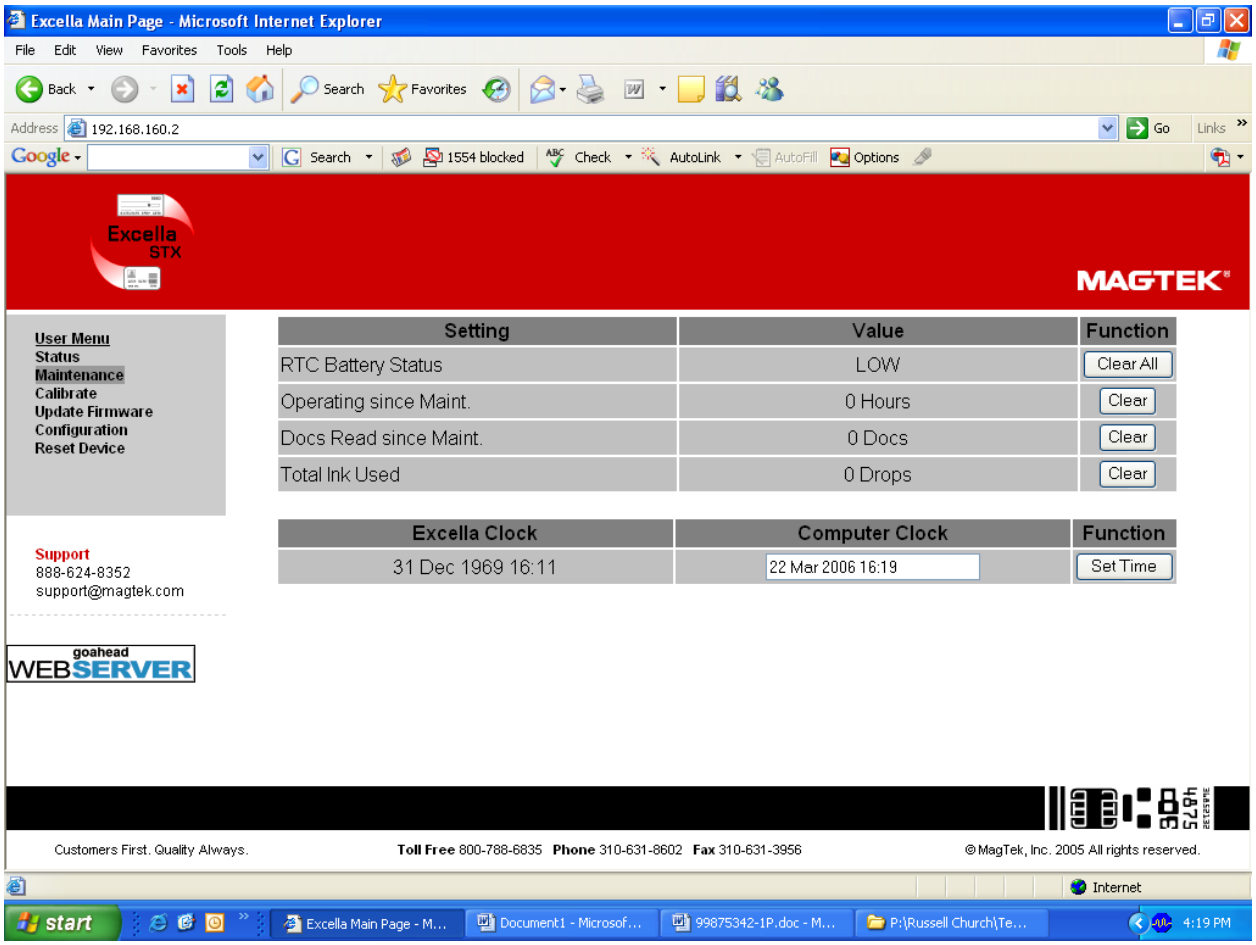


Figure A-2. Maintenance Page

CALIBRATE

Scanner calibration is performed at the factory, and subsequent calibrations are NOT required under normal operating conditions. For rare situations where calibration may be required, please call the Help Desk for assistance to perform calibration using the Calibrate Page.

UPDATE FIRMWARE

The Update Firmware Page, Figure A-3, is used to download new firmware to the Excella STX device. Firmware for Excella STX is provided in a file with the ".mef" extension.

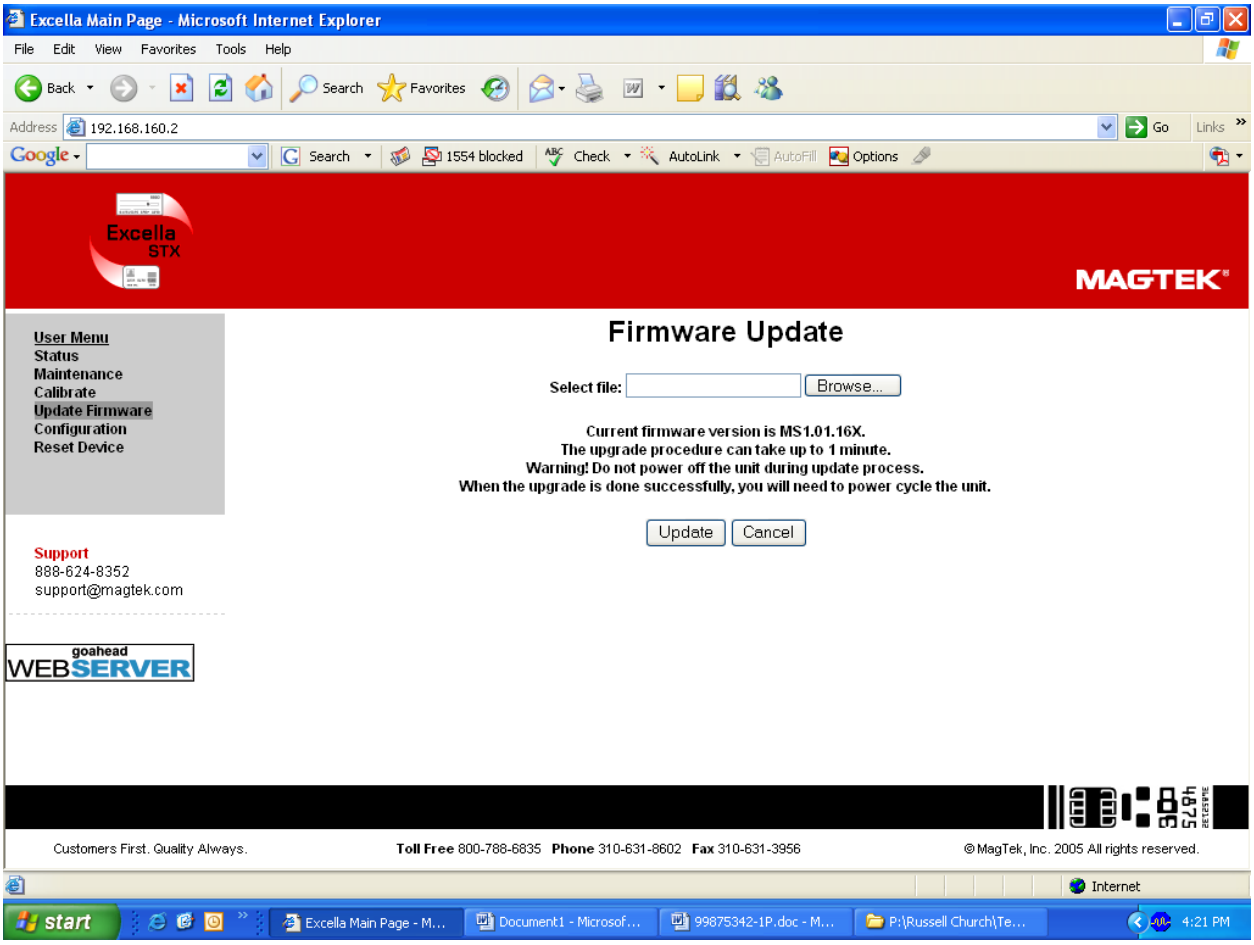


Figure A-3. Update Firmware Page

Using the Update Firmware page, Figure A-3, follow these instructions to download new firmware:

1. Click on the "Browse" button to locate and select the firmware file (e.g., 117x.mef).

2. Click on the "Update" button.

3. The update process will take several minutes (watch progress bar at the bottom of the screen).

Caution

Do not turn off power to Excella STX during the update process. If power is turned off, Excella STX will hang up and the unit may have to be returned to the factory.

4. When completed, the "Firmware Update" message will appear with information as follows:

   Filename = ms117x.mef
   Size = 413816 bytes
   Upgrade completed

5. At this time, cycle the power of Excella (Off/On).

CONFIGURATION

The Configuration Pages, Figures A-4, A-5, and A-6 offer options to setup the Network, Ethernet, and USB configurations. Additionally, an option is provided to save and restore device (Figure A-7) configurations. A general description for all the options follows.

Network Configuration Tab

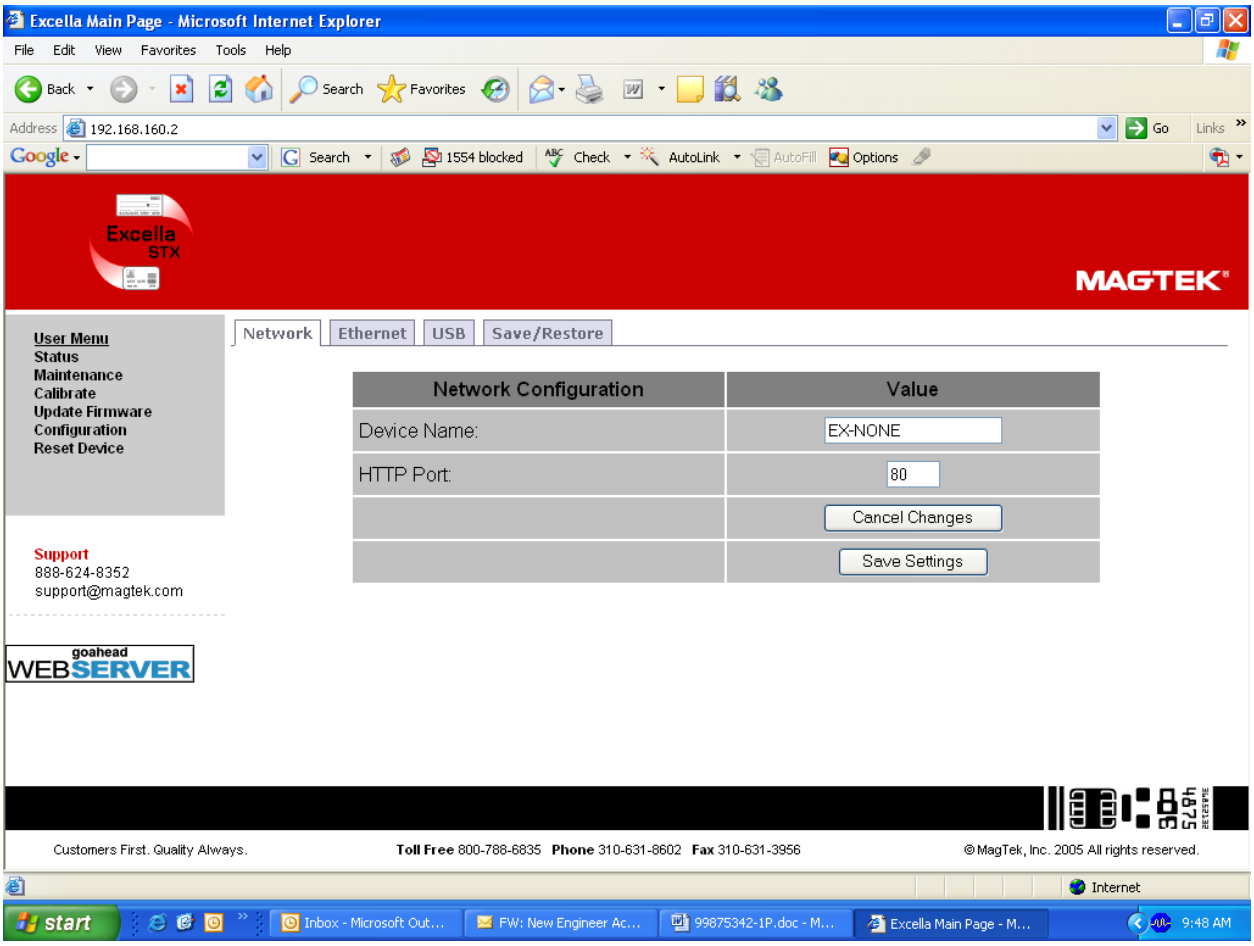


Figure A-4. Network Configuration Tab

Device Name

The Excella STX device name provided to the DHCP server (the network server must be setup appropriately to use this option). This name must be unique for each Excella STX device on the network. The default factory value is “EX” followed by the unit’s S/N (e.g. EX-A03LEY9).

HTTP Port

The default value is “80”. Use this option to change the HTTP port value.

“Cancel Changes” Button

Click on this button to cancel the current settings being displayed on this page.
“Save Settings” Button

Click on this button to save the current settings to the Excella STX device.

Ethernet Configuration Tab

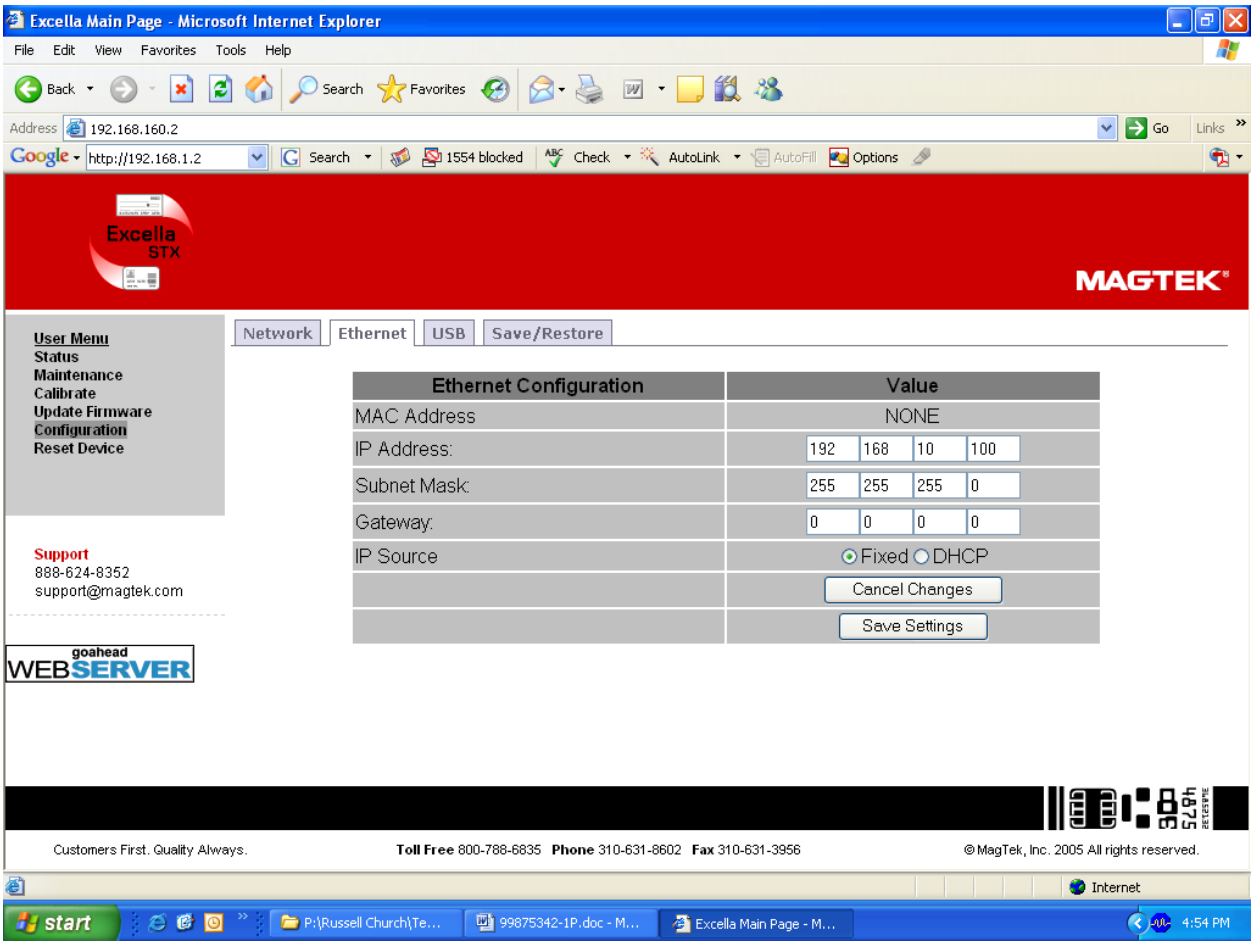


Figure A-5. Ethernet Configuration Tab

MAC Address

The MAC (Media Access Control) address uniquely identifies each Excella STX device. This number is assigned at the factory and cannot be changed.

IP Address

This is Excella STX's device IP address on the network. Use this option to change the IP address value. The default factory value is 192.168.10.100.

Subnet Mask

Use this option to change the Subnet Mask value. The default factory value is 255.255.255.0.

Gateway

Use this option to change the Gateway value. The default factory value is 0.0.0.0

IP Source

- Select the "Fixed" option if the values will be set manually using this page.
- Select the "DHCP" option if the Network server will dynamically assign these values (i.e. the values on this page will be ignored). The server must be configured appropriately to use DHCP.

"Cancel Changes" Button

Click on this button to cancel the current settings being displayed on this page.

"Save Settings" Button

Click on this button to save the current settings to the Excella STX device.

USB Configuration Tab

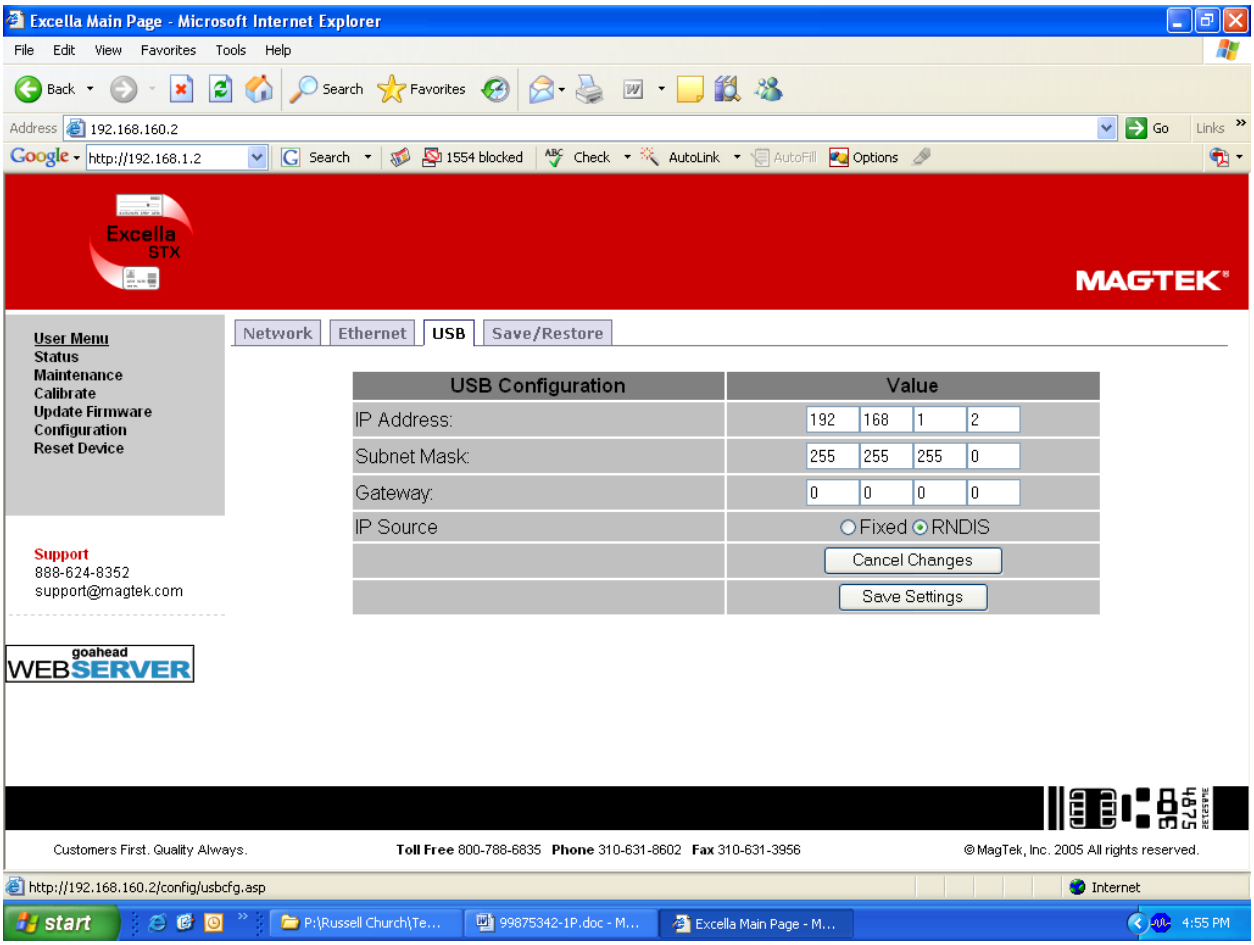


Figure A-6. USB Configuration Tab

IP Address

This is Excella STX's device IP address. Use this option to change the IP address value. The default factory value is 192.168.160.2

Subnet Mask

Use this option to change the Subnet Mask value. The default factory value is 255.255.255.0.

Gateway

Use this option to change the Gateway value. The default factory value is 0.0.0.0

IP Source

- Select "RNDIS", the default option, if the values will be provided by the PC to which Excella STX is being connected to (i.e., the values on this page will be ignored). It is recommended to run the "ExcellaUSBConfig" utility (See Appendix B) on the PC to set these values when the "RNDIS" option is selected.
- Select the "Fixed" option if the values will be set manually using this page.

"Cancel Changes" Button

Click on this button to cancel the current settings being displayed on this page.

"Save Settings" Button

Click on this button to save the current settings to the Excella STX device.

Save/Restore Configuration Tab

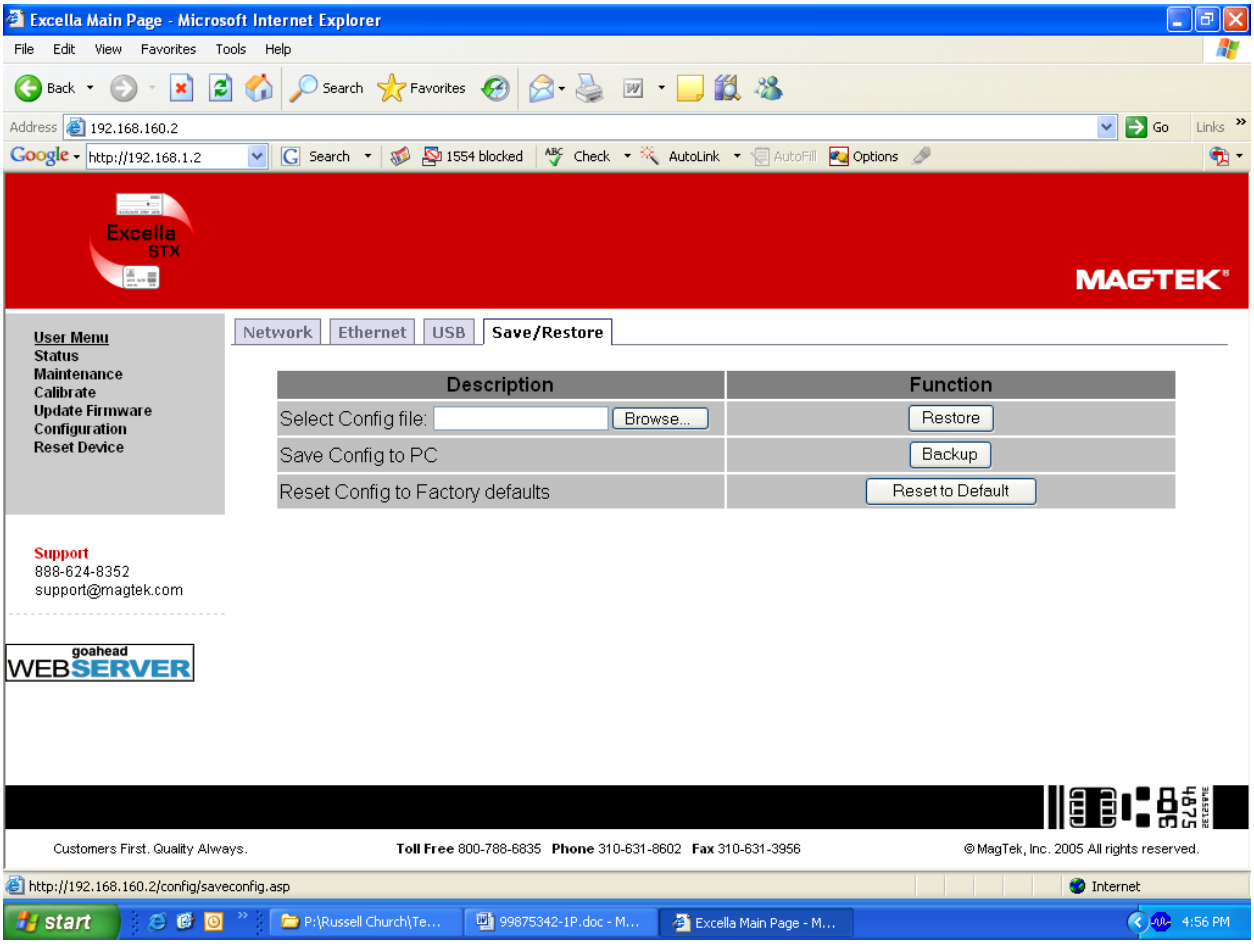


Figure A-7. Save/Restore Configuration Tab

"Select Config File" Box

This option is used in conjunction with the "Restore" button. Use the "Browse" button to locate and select a previously saved config file, then click on "Restore" to activate the options saved in the Config file.

Save Config to PC

Click on the "Backup" button to save ALL current configuration options to a Config file on the PC. The default filename is "excella_config.ecg".

Reset Config to Factory Defaults

Click on the "Reset to Default" button to restore ALL default factory settings.

RESET DEVICE

This option is a quick and convenient way to reset the device. A device reset must be performed for new configurations to take effect and become active. During the reset operation, the device is not available and the standard message "The page cannot be displayed" will be shown. This message can be ignored.

APPENDIX B. USB CONFIGURATION UTILITY

OVERVIEW

MagTek's "ExcellaUSBConfig" utility (Figure B-1) is used to configure Excella STX for the USB interface ONLY. The utility will automatically select and configure IP address for the PC and Excella STX.

Note

ExcellaUSBConfig must be run to establish a connection between the PC and Excella STX.

After Excella STX's API/Demo has been installed, ExcellaUSBConfig can be found on the following directory: C:\Program Files\Magtek\Excella-STX Demo.

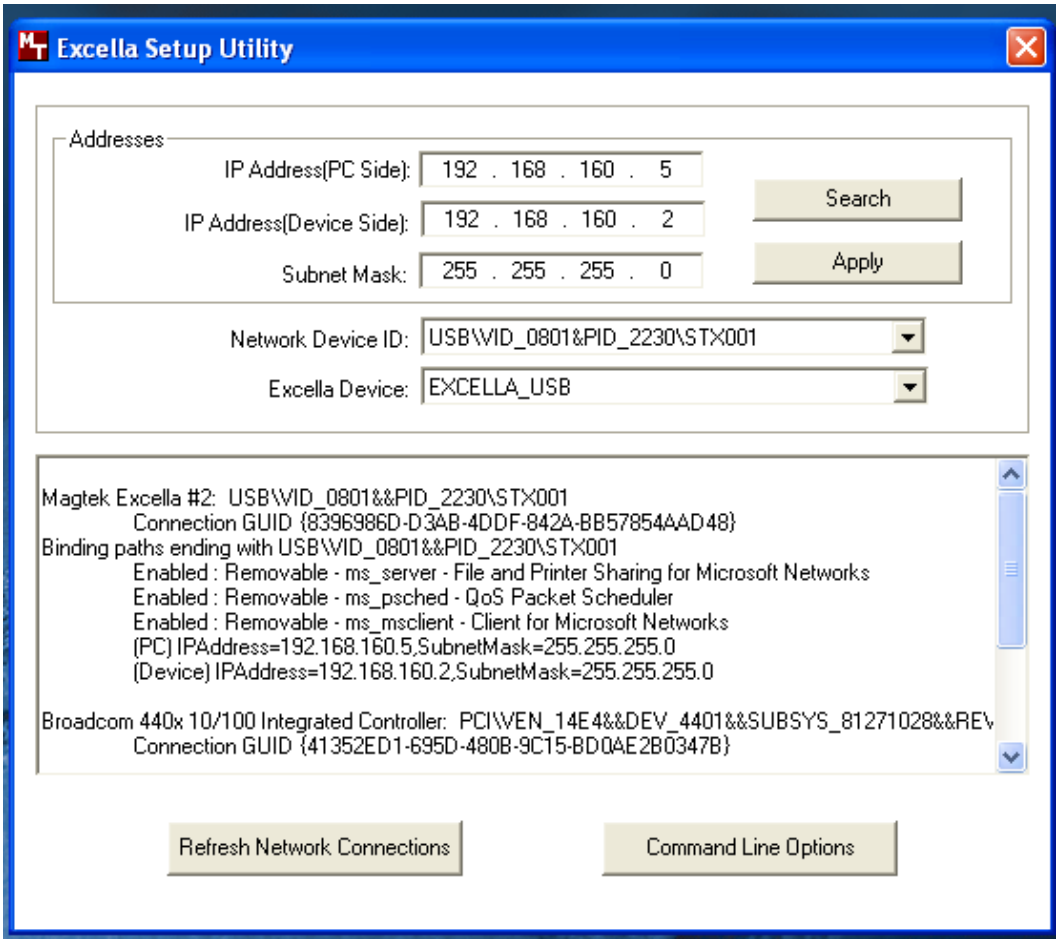


Figure B-1. ExcellaUSBConfig Utility Screen

DEVICE ADDRESS SETUP

Using My Computer go to the folder C:\Program Files\Magtek\Excella-STX Demo.

- Run the ***ExcellaUSBConfig.exe*** program.
- For ***Subnet Mask, Network Device ID*** and ***Excella Device,*** accept the defaults shown.
- Click once on the ***Search*** button (this will automatically fill in valid IP addresses).
- Click on the ***Apply*** button.
- Click ***OK***.
- Close this program.

APPENDIX C. CHECK READING

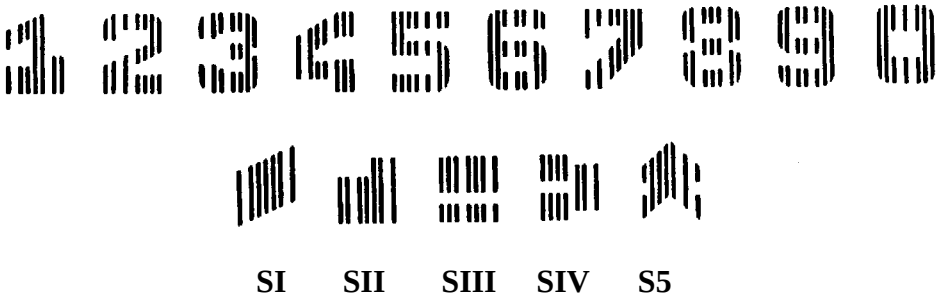
The characters printed on the bottom line of commercial and personal checks are special. They are printed with magnetic ink to meet specific standards. These characters can be read by a Excella Reader at higher speeds and with more accuracy than manual data entry. Two MICR character sets are used world wide; they are: E13-B and CMC-7. The E13-B set is used in the US, Canada, Australia, United Kingdom, Japan, India, Mexico, Venezuela, Colombia, and the Far East. The CMC-7 set is used in France, Spain, other Mediterranean countries, and most South American countries.

E13-B CHARACTER SET

The MICR font character set E13-B includes digits 0 through 9 and four symbols. The numbers found on U.S. checks are of the E13-B character set. The numbers and symbols of E13-B are as follows:

CMC-7 CHARACTER SET

The numbers and symbols of the CMC-7 character set are as follows:



The nonnumeric CMC-7 characters are translated by the Excella Reader as shown in Table C-1.

Table C-1. CMC-7 Nonnumeric Characters

CMC-7 Character	MICRImage Reader Output
SI	A
SII	B
SIII	C
SIV	D
SV	E

CHECK LAYOUTS

Personal checks with MICR fields are shown in Figure C-1. Business checks are shown in Figure C-2. The digits 1 through 4 in the illustrations are described below under MICR Fields.

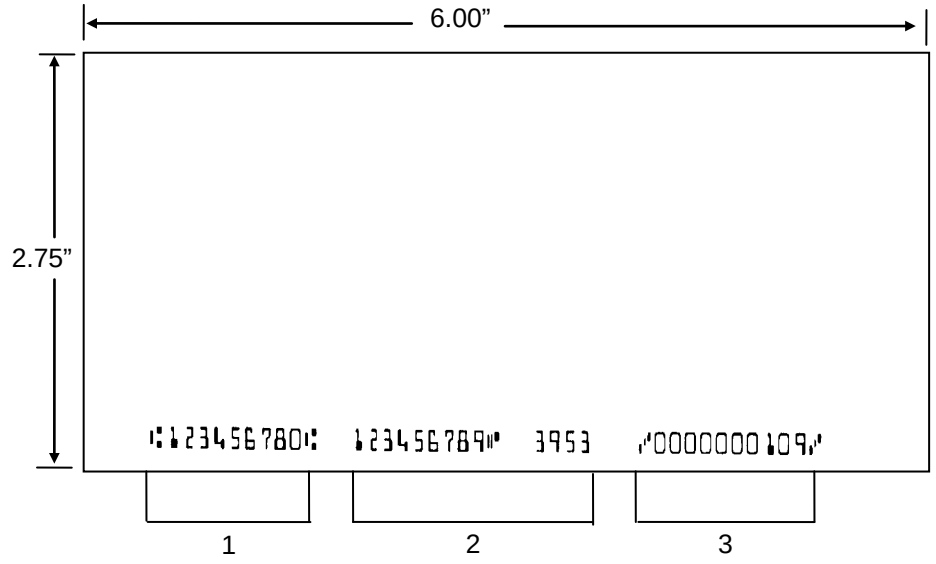


Figure C-1. Personal Checks

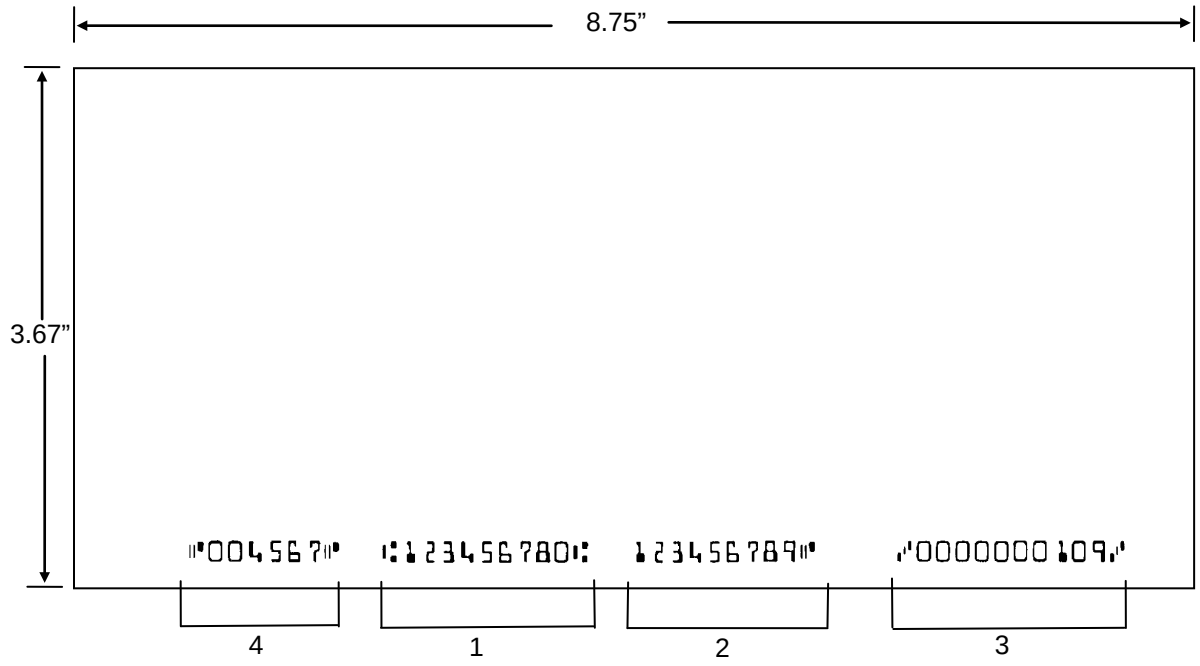


Figure C-2. Business Checks

MICR FIELDS

The numbers 1 through 4 refer to the numbers below the checks on the illustration and represent the 4 MICR fields.

1-Transit Field

The Transit field is a 9-digit field bracketed by two Transit symbols. The field is subdivided as follows:

- Digits 1-4 Federal Reserve Routing Number
- Digits 5-8 Bank ID Number (American Banking Association)
- Digit 9 Check Digit

2-On-Us Field

The On-Us field is variable, up to 19 characters (including symbols). Valid characters are digits, spaces, dashes, and On-Us symbols. The On-Us field contains the account number and may also contain a serial number (Check number) and/or a transaction code. Note that an On-Us symbol must always appear to the right of the account number.

3-Amount Field

The Amount field is a 10-digit field bracketed by Amount symbols. The field is always zero-filled to the left.

4-Auxiliary On-Us Field

The Auxiliary On-Us field is variable, 4-10 digits, bracketed by two On-Us symbols. This field is not present on personal checks. On business checks, this field contains the check serial number.

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