

SYSTEM ADMINISTRATOR'S GUIDE



**Avery Dennison®
Pathfinder®
6059 Printer**

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GETTING STARTED

The Avery Dennison® Pathfinder® 6059 prints, scans, and collects data. The printer operates in peel mode or non-peel mode. The printer uses the Android™ 7.1 platform.

The 6059 may contain

- ◆ an optional RFID (Radio Frequency Identification) module, which the printer uses to encode (program) an RFID inlay while printing. RFID inlays contain an embedded programmable microchip and an antenna. See Chapter 3, “[Using RFID](#)” for more information.



RFID supplies can be damaged by static electricity. Ground yourself by touching metal before handling the RFID supplies.

- ◆ an optional 802.11 a/b/g/n/ac WLAN plus Bluetooth 4.2 dual mode radio.

Use the standard Android Settings app to make changes to the screen brightness, setting the date/time, notifications, etc. This manual does not address the Android Settings.

Audience

This manual is for the System Administrator who configures the printer/scanner and performs diagnostics using the Printer Setup and Asset Tracking Applications. Printer Setup and Asset Tracking are pre-loaded applications on each 6059 printer.

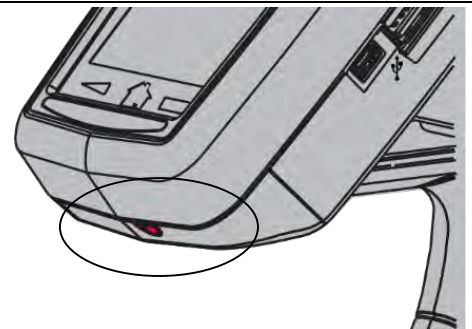
A *Setup Guide* is included with each printer. Review the *Safety Document* included with your printer and the Regulatory information found on our web site. Keep the box and packaging materials in case the printer ever needs repair.

Using the Printer

The power button is red. Press and hold the power button to turn off or restart the printer.

The printer has a touch screen display. Use your finger (or a stylus) to select options. To scroll within a menu, quickly swipe with your finger. You can also slightly press while swiping up or down. A quick tap always launches the selected item.

When the printer is turned on, swipe up the screen to unlock. The display has several icons:



Key	Description
	Back - returns to the previous screen/menu
	Home – user sees the Home screen.
	Overview – opens thumbnails of recently used applications, which allows you to switch tasks easily.
	Apps – shows your applications and widgets.

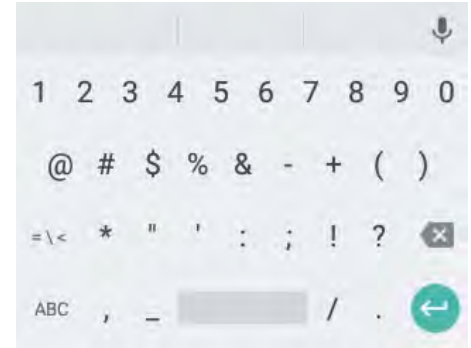
Use a soft cloth to clean the screen. **Do not use household cleaners.**

Status Bar

The status bar shows the battery voltage, connection type, wireless signal strength, etc. similar to the icons on mobile phones.

Using the Keyboard

To enter data on the printer, the following keyboards are available:



Changing the Printer's Display Language

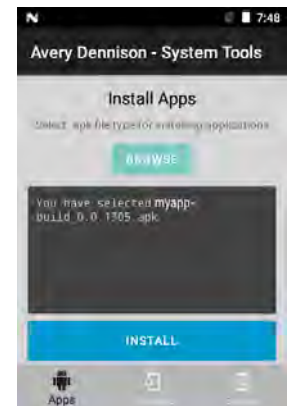
Use the standard Android Settings app to change the Languages & input settings.

Installing an Application

Use the **Update Tools** Application to install applications. Add one application at a time.

Use a USB flash/thumb drive, formatted to FAT32, to transfer the .APK file to your printer.

1. Open the **Update Tools** application.
2. Insert the thumb drive into the printer.
3. Tap **Apps** and **Browse**.
4. Navigate to the .APK file on the USB thumb drive.
5. Tap the .APK file and follow the on-screen instructions. The application loads.



Connecting the Printer to a Wireless Network

The printer has an optional 802.11 a/b/g/n/ac WLAN plus Bluetooth 4.2 dual mode radio. The radio is dual band and operates within the 2.4GHz and the 5GHz RF Bands.

Use the standard Android Settings app to configure the printer for Wi-Fi.

Using Bluetooth® to Connect the Printer

The printer has an optional Bluetooth® 4.2 dual mode, which has both Bluetooth 2.1 +EDR mode and 4.2 Bluetooth mode. Bluetooth operates within the 2.4GHz band.

Bluetooth is a way to wirelessly communicate between devices. Your device must be Bluetooth enabled (contain a Bluetooth chip) to use Bluetooth technology. The Bluetooth-enabled printer has a line-of-sight range of approximately 3,280 feet (1 km). It can connect to a PC, other Bluetooth-enabled device, or a LAN network. The maximum number of printers that can connect via Bluetooth to one smart device is seven.

📌 Enable Wi-Fi, then enable Bluetooth. Bluetooth does not function correctly until Wi-Fi is enabled.

Use the standard Android Settings app to find and pair the printer with Bluetooth.

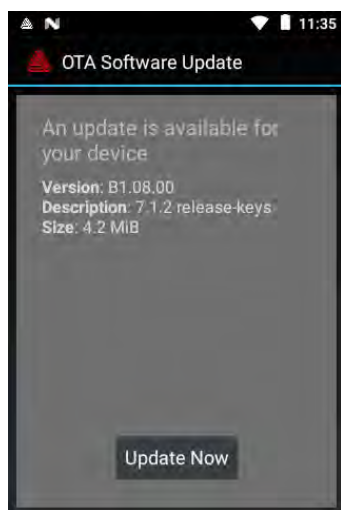
Adding Users

Use the standard Android Settings app to create users.

Only Owners are allowed to process Over The Air (OTA) updates.

Over The Air Core Updates

The 6059 printer has our *pre-configured* Cloud server address to receive core updates, similar to the way mobile phones receive OS updates. The printer receives a ZIP file. The printer's core system includes the Print Engine, Display Board and RFID firmware. Once the printer is connected to a network (WiFi or Ethernet) and an update is available, the printer displays a notification.



For more information, refer to the *Printer Update Guide*.

If updates are available, follow the on-screen instructions. The printer turns off then on while processing the update. You see a message “Installing System Update” and the red LED. The update is complete when the red LED stops blinking.

Customer-installed applications remain when the core is updated.

Using Device Hardening

The printer's USB ports and radio may be disabled for security reasons within your environment. The printer contains two USB ports. The smaller port is the device port that connects the printer to a PC. The larger port is the host port that allows file transfer with a flash/thumb drive. If USB is disabled, both USB ports are disabled.

1. Open the *Printer Setup Application*.
2. Tap the three dots icon to login as an Administrator using the password: **1234**.
3. Tap Device Hardening.
4. Deselect USB Enabled and/or Radio Enabled as necessary.
5. Restart the printer for the changes to take effect. To restart the printer, press and hold the red power button until the Restart option appears.

Resetting the Printer to Factory Defaults

Use the standard Android Settings app Backup & reset function to reset the printer to factory defaults.

Performing a factory default erases all previously installed applications and requires reformatting the SD card. Application data is saved *if* it was backed up.

What if I Forget My Password/Passcode?

You may lock the printer with a password or passcode. If you forget the password/passcode, contact Service to recover the printer. Service can reset the printer, but you will lose all installed applications and data on the SD card (if it was not backed up).

Please keep your password/passcode in a secure location.

Using the Asset Tracking Application

Asset tracking contains the manufacturer's product ID and serial number, and the owner's product ID and serial number. A password is required to edit this data. The default password is 123321. You can print an asset tracking label that contains the product IDs and serial numbers for your records.

Editing Owner Data

To edit the owner data:

1. Open the Asset Tracking application.
2. Tap the pencil to edit the data.
3. Enter the password (123321).
4. Select the Owner **Product ID** field.
5. Use the keyboard or scan a bar code to enter a new Product ID.
6. Select the Owner **Serial Number** field.
7. Use the keyboard or scan a bar code to enter a new Serial Number.
8. Select the Owner Data field and enter your information.

Note: The OEM Product ID and Serial Number cannot be changed as it is entered by the Manufacturer.

9. Tap **Save**.

SETTING SUPPLY & PRINTER OPTIONS

2

This chapter explains how to select the sensor type, calibrate sensors, and adjust supply positioning.

- ✦ Use the standard Android Settings app to make changes to the screen brightness, setting the date/time, notifications, etc. This manual does not address the Android Settings.

Use the *Printer Setup Application*, **Supply menu** to adjust any of the supply options below.

Option	Choices	Default
Sensor Type	Black Mark/Non-indexed/Die Cut (with black marks)	Black Mark
Calibrate Blackmark sensor*	NA	NA
Calibrate On-Demand sensor*	NA	NA
Feed	Feeds a blank label	NA
Supply Position	-99 to 99	0
Overfeed Distance	10 to 255	0
Max. Supply Length	0 to 12	8

* Refer to the printer's *Equipment Manual* for information about calibrating supply.

Use the *Printer Setup Application*, **Energy menu** to adjust any of the printer options below.

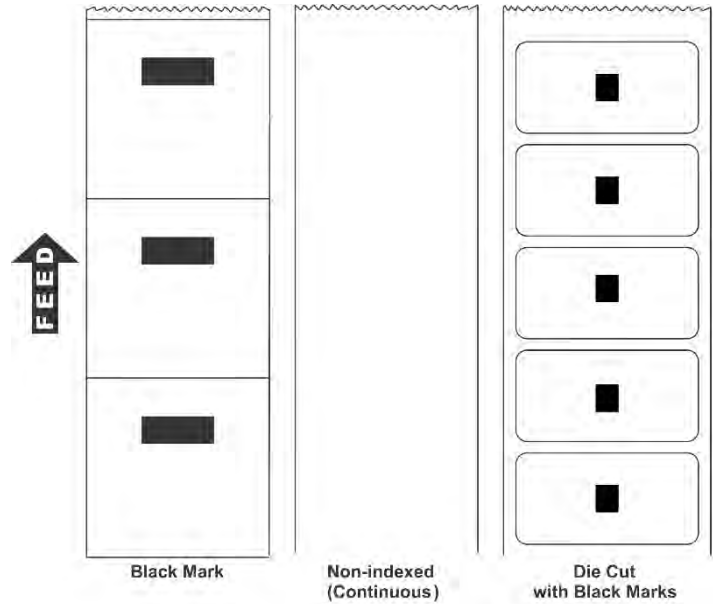
Option	Choices	Default
Contrast	-100 to 100	0
Energy	Standard/High	Standard
Print Checkerboard Label	NA	NA
Print Gray Scale Label	NA	NA
Print Serial Quality Label	NA	NA
Print Parallel Quality Label	NA	NA
Print Diagnostic Label	NA	NA
Print RFID Diagnostic Label	NA	NA

* Refer to the printer's *Equipment Manual* for information about printing test labels.

Setting the Sensor Type

The printer can print on black mark, non-indexed (fax/receipt paper), and die cut supplies (with black marks). The printer defaults to using the black mark sensor. Your printer may have a custom application that automatically sets this value. Set the printer's sensor type to match the loaded supplies.

Refer to "Calibrating the Sensors" in the printer's Equipment Manual to calibrate the supply.



Select

Black Mark

Non-indexed

Die Cut with black marks

For

Black mark supplies have black marks on the back of the supply for sensing.

Continuous supplies such as fax or receipt paper that do not have any sense marks.

Die cut supplies with black marks on the back of the supply for sensing.

Calibrating the Sensors

Calibrate the sensors

- ◆ on initial printer setup
- ◆ whenever the sensor/supply is changed (from black mark to die cut or vice versa)
- ◆ if using labels with a different color backing (besides white).

Refer to the printer's *Equipment Manual* for information about calibrating supply.

Feeding a Label

To feed a blank (or printed label), press Feed from the Supply Menu. A blank label feeds out of the printer.

Setting the Supply Position

Adjust the supply position to set where data prints vertically on the supply. The adjustments are in steps (0.00333 inch). The default value is 0.

Enter the supply position value. The printing shifts as shown.



Select	To
+ (positive) value	Increase the setting. Moves the printed image down on the label.
- (negative) value	Decrease the setting. Moves the printed image up on the label.

Setting the Overfeed Distance

Adjust the overfeed distance to set the distance that your supply is fed out of the chute after it prints. The adjustments are in steps (0.00333 inch). The default value is 0.

Select	To
Increase the value	Feed more supply out of the chute after printing.
Decrease the value	Feed less supply out of the chute after printing.

Setting the Maximum Supply Length

Adjust the Max Supply Length if you are using supply that is longer than 8.0". The size of your supply is measured from top to bottom. The default value is 8 inches. If your supply is shorter than 8" you do not need to adjust this setting (the printer automatically detects supply that is 8" or shorter).

Select	To
Increase the value	Feed more supply out of the chute after printing.
Decrease the value	Feed less supply out of the chute after printing.

Setting the Contrast

The print contrast controls the darkness of the printing on your supply. You may need to increase or decrease the print contrast depending on your supply type. Having the correct print contrast setting is important because it affects how well your barcodes scan and how long your printhead lasts. The default value is 0.

Select	To
Increase the value	The print becomes darker.
Decrease the value	The print becomes lighter.

Setting the Energy

The energy setting controls the printhead energy. The default is standard. Contact your Avery Dennison Representative for more information about supplies for this printer.

Select	To
Standard	Use for all supplies, besides synthetic supplies.
High	Use for synthetic supplies.

CONFIGURING THE SCANNER

The scanner may be configured to

- ◆ set the scanner operating mode, trigger mode, and scanner timeout
- ◆ select the .wav file for successful and unsuccessful scans
- ◆ enable and disable each specific bar code and their options.

Use the *Printer Setup Application* to configure the scanner options below.

General Settings

Option	Choices	Default
Scanner Operation Mode	Momentary/Continuous	Momentary
Trigger Mode	Off/Scan	Scan
Selective Scanning	On/Off	On
No Scan Timeout	0 to 255	30
Aim Duration	0 to 99	0
Linear Security	1 to 4	1
Bi-Directional Redundancy	1 to 4	1
Picklist Mode	On/Off	Off

Setting the Scanner Operating Mode

Select the operating mode for the scanner. The default is Compatible. An unsuccessful scans turns off the scanner and activates the tone (.wav file) set using the Scanner Configuration menu. A “no scan” is interpreted as an unsuccessful scan.

Select	To
Momentary	The scanner is on when the trigger is pressed and goes off when the trigger is released.
Continuous	The scanner is always on. A good scan causes the scanner to reset and continue scanning. To save battery life, the 2D scanner uses "Motion Enhancement" (triggerless operation); the scanner only scans when it senses motion.

Setting the Trigger Mode

Select the operating mode for the trigger. The default is Scan.

Scan	Pressing the trigger turns on the scanner.
Off	The printer ignores the trigger press and does not turn on the scanner.

Using Selective Scanning

Allows the scanner to scan subsets of bar codes.

Enabled (on) Allows the scanner to scan subsets of bar codes.

Disabled (Off) Does not scan subsets of bar codes.

Setting the No Scan Timeout

Sets the amount of time (in tenths of seconds) the scanner beam is on before turning off when the trigger is pressed. The default is 30.

Select	To
Increase the setting	Increases the amount of time the scanner's beam is on when the trigger is pressed.
Decrease the setting	Decreases the amount of time the scanner's beam is on when the trigger is pressed.

Setting the AIM Duration

Sets the duration (in tenths of seconds) of the aiming beam when the scanner is on. The default is 0 (disables the AIM feature).

Select	To
Increase the setting	Increases the duration of the aiming beam when the scanner is on.
Decrease the setting	Decreases the duration of the aiming beam when the scanner is on.

Setting the Linear Security

Sets how many times to scan the same bar code to determine a successful read. The options are 1 through 4. The default is 1.

Select	To
1	The scanner must scan a bar code once for a successful read.
2	The scanner must scan a bar code twice for a successful read.
3	The scanner must scan a bar code three times for a successful read.
4	The scanner must scan a bar code four times for a successful read.

Setting the Bi-Directional Redundancy

Specifies that good scans must occur in both directions (forward and reverse) for the scan to be complete. The options are 1 through 4. The default is 1. This is used in conjunction with linear security.

Select	To
1	The scanner must scan a bar code once for a successful read.
2	The scanner must scan a bar code twice for a successful read.
3	The scanner must scan a bar code three times for a successful read.
4	The scanner must scan a bar code four times for a successful read.

Using Picklist Mode

Allows the scanner to scan only the barcode directly within the beam's crosshairs. This may be needed when several bar codes appears on a label.

Select	To
Enabled (On)	The scanner scans only the specific barcode directly within the beam's crosshairs.
Disabled (Off)	The scanner scans any bar code within the field of view.

Enabling Specific Bar Codes

You must enable and disable each specific bar code type for scanning. Some bar codes require additional settings. Some bar codes can be printed, but not scanned. See "[Printable Bar Codes vs. Scannable Bar Codes](#)" for more information.

We recommend including the specific bar code settings in your application (done by your Application Developer using the *SDK documentation*).

Configuring UPC/EAN Bar Codes

UPC (Universal Product Code) and EAN (European Article Number) bar codes are linear codes for numeric data. Use the *Printer Setup Application* to configure the UPC/EAN bar code scanner options below.

Select	To
UPCA	Allows the scanner to scan UPCA, UPCA+2, and UPCA+5 bar codes.
Transmit Check Digit	Tells the scanner return the check digit with the data when the bar code is scanned. Enable or disable this option.
Preamble Mode	Specifies the characters that preface the returned data from a UPCA bar code. The USA country code is 0. Select None (No Data), SYSCCHAR (System Character), or SYSCCOUNT (Country Code and System Character).
UPCE	Allows the scanner to scan UPCE bar codes.
UPCE1	Allows the scanner to scan UPCE1 bar codes.
EAN8	Allows the scanner to scan EAN8 bar codes.
EAN13	Allows the scanner to scan EAN13 bar codes.
Coupon Code	Allows the scanner to scan UPCA, UPCA+2, UPCA+5, and UPCA/EAN-128 bar codes. Set Supplemental to Auto to use this option.
EAN Bookland	Allows the scanner to scan Bookland EAN bar codes.
EAN8 Zero Extension	Tells the scanner to add 5 leading zeros to EAN8 bar codes to convert them into EAN13 bar codes.
EAN8 to EAN13	Tells the scanner to label the bar code as EAN8 or EAN13 when EAN Zero Extend is enabled.
UPCE to UPCA	Tells the scanner to convert UPCE bar codes to a UPCA format before returning the data. After the conversion, your UPCA selections affect the data.
UPCE1 to UPCA	Tells the scanner to convert UPCE1 bar codes to a UPCA format before returning the data. After the conversion, your UPCA selections affect the data.
Supplemental Mode	Specifies how to treat UPC and EAN bar codes with supplemental characters (UPCA+2, for example). The range is 0 to 12. Using 0 ignores supplemental characters. The other numbers indicate how many supplemental digits are scanned.

Select	To
Supplemental Redundancy	Sets the number of times a symbol without supplemental information is decoded. The range is 2 – 20. The default is 7.
Security	<p>Sets how many times to scan the same bar code to determine a successful read. The range is 1 – 4. The default is 1. Before setting this security level, you must decide the print quality of the bar codes you are scanning. The better the quality of the bar code, the lower the security level needed.</p> <p>1 - Choose 1 if most of your scans are successful.</p> <p>2 - Choose 2 when your unsuccessful scans are related to characters 1, 2, 7, and 8.</p> <p>3 - Choose 3 when your unsuccessful scans are not limited to characters 1, 2, 7, and 8.</p> <p>4 - Choose 4 if unsuccessful scans still occur at level 2.</p>

Configuring Code 39 Bar Codes

Code 39 is a linear one-dimensional bar code. Use the *Printer Setup Application* to configure the Code 39 bar code scanner options below.

Select	To
Enabled	Allows the scanner to scan Code 39 bar codes.
Transmit Check Digit	Tells the scanner to return the check digit with the data when a Code 39 bar code is scanned.
Convert to Code32	Tells the scanner to convert Code 39 bar codes to Code 32 bar codes.
Verify Check Digit	Tells the scanner to check the integrity of all Code 39 bar codes that it scans. Use this option only for Code 39 bar codes with a modulo 43 check digit.
Trioptic 39	Allows the scanner to scan Trioptic Code 39 bar codes. The length is always 6. Do not enable this bar code and Code 39 Full ASCII at the same time.
Full ASCII	Allows the scanner to interpret data in a Code 39 bar code as an ASCII representation. The scanner does not auto discriminate between Code 39 and Code 39 Full ASCII. Do not enable this option and Trioptic Code 39 at the same time.
Code32 Prefix	Allows the scanner to scan Code 32 Prefix bar codes.
Length 1	Sets the length(s) for Code 39 bar codes. Lengths include check digits.
Length 2	<p>For variable length bar codes, set both Length 1 and Length 2 to 0. Use variable length for Code 39 Full ASCII bar codes.</p> <p>For a variable range, set Length 1 to the lower limit and Length 2 to the upper limit.</p> <p>For one fixed length bar codes, set both Length 1 and Length 2 to the same length. This specifies a single length for valid bar codes.</p> <p>For two fixed length bar codes, set Length 2 to the <i>shorter</i> length and Length 1 as the <i>longer</i> length.</p> <p>The range for Length 1 is 0 to 99. The default is 2.</p> <p>The range for Length 2 is 0 to 99. The default is 55.</p>

Configuring Code 93 Bar Codes

Code 93 is a linear one-dimensional bar code that provides higher density than Code 39. Use the *Printer Setup Application* to configure the Code 93 bar code scanner options below.

Select	To
Enabled	Allows the scanner to scan Code 93 bar codes.
Length 1	Sets the length(s) for Code 93 bar codes. Lengths include check digits.
Length 2	For variable length bar codes, set both Length 1 and Length 2 to 0. For a variable range, set Length 1 to the lower limit and Length 2 to the upper limit. For one fixed length bar codes, set both Length 1 and Length 2 to the same length. This specifies a single length for valid bar codes. For two fixed length bar codes, set Length 2 to the <i>shorter</i> length and Length 1 as the <i>longer</i> length. The range for Length 1 is 0 to 99. The default is 4. The range for Length 2 is 0 to 99. The default is 55.

Configuring Code 128 Bar Codes

Code 128 is a high density linear code for alphanumeric or numeric data. Use the *Printer Setup Application* to configure the Code 128 bar code scanner options below.

Select	To
Enabled	Allows the scanner to scan Code 128 bar codes.
UCC/EAN-128	Allows the scanner to scan UCC/EAN-128 bar codes.
ISBT 128	Allows the scanner to scan ISBT 128 bar codes. Any length bar code is valid.
Length 1	Sets the length(s) for Code 128 bar codes. Lengths include check digits.
Length 2	For variable length bar codes, set both Length 1 and Length 2 to 0. For a variable range, set Length 1 to the lower limit and Length 2 to the upper limit. For one fixed length bar codes, set both Length 1 and Length 2 to the same length. This specifies a single length for valid bar codes. For two fixed length bar codes, set Length 2 to the <i>shorter</i> length and Length 1 as the <i>longer</i> length. The range for Length 1 is 0 to 99. The default is 0. The range for Length 2 is 0 to 99. The default is 0.

Configuring I 2of5 Bar Codes

I 2of5 (Interleaved Two of Five) is a linear bar code for numeric data. Data is encoded in both the bars and the spaces. Use the *Printer Setup Application* to configure the I 2of5 (Interleaved 2of5) bar code scanner options below.

Select	To
Enabled	Allows the scanner to scan I 2of5 bar codes.
Convert to EAN13	Tells the scanner to convert 14-character I 2of5 bar codes into an EAN13 bar code. For the conversion to work, the following must occur: <ul style="list-style-type: none">◆ I 2of5 bar codes must be enabled.◆ 14 must be a valid length.◆ The data must have a leading zero.◆ The data must include an EAN13 check digit.
Transmit Check Digit	Tells the scanner to return the check digit with the data when an I 2of5 bar code is scanned.
Check Digit Verification	Tells the scanner to check the integrity of a scanned I 2of5 bar code to ensure it complies with either USS or OPCC standards.
Length 1	Sets the length(s) for I 2of5 bar codes. Lengths include check digits.
Length 2	For variable length bar codes, set both Length 1 and Length 2 to 0. For a variable range, set Length 1 to the lower limit and Length 2 to the upper limit. For one fixed length bar codes, set both Length 1 and Length 2 to the same length. This specifies a single length for valid bar codes. For two fixed length bar codes, set Length 2 to the <i>shorter</i> length and Length 1 as the <i>longer</i> length. The range for Length 1 is 0 to 99. The default is 14. The range for Length 2 is 0 to 99. The default is 0.

Configuring D 2of5 Bar Codes

D 2of5 (Discrete Two of Five) is a linear bar code for numeric data. Data is only encoded in the bars. Use the *Printer Setup Application* to configure the D 2of5 bar code scanner options below.

Select	To
Enabled	Allows the scanner to scan D 2of5 bar codes.
Length 1	Sets the length(s) for D 2of5 bar codes. Lengths include check digits.
Length 2	For variable length bar codes, set both Length 1 and Length 2 to 0. For a variable range, set Length 1 to the lower limit and Length 2 to the upper limit. For one fixed length bar codes, set both Length 1 and Length 2 to the same length. This specifies a single length for valid bar codes. For two fixed length bar codes, set Length 2 to the <i>shorter</i> length and Length 1 as the <i>longer</i> length. The range for Length 1 is 0 to 99. The default is 12. The range for Length 2 is 0 to 99. The default is 0.

Configuring Codabar Bar Codes

Codabar is a linear one-dimensional bar code. Use the *Printer Setup Application* to configure the D 2of5 (Discrete 2of5) bar code scanner options below.

Select	To
Enabled	Allows the scanner to scan Codabar bar codes.
NOTISEdit	Tells the scanner to strip the start and stop characters from scanned Codabar bar codes.
CLSIEdit	Tells the scanner to strip the start and stop characters from 14-character Codabar bar codes and insert spaces after the first, fifth, and tenth characters. The 14-character length does not include start and stop characters.
Length 1	Sets the length(s) for Codabar bar codes. Lengths include check digits.
Length 2	For variable length bar codes, set both Length 1 and Length 2 to 0. For a variable range, set Length 1 to the lower limit and Length 2 to the upper limit. Specifying a range of lengths increases the likelihood of unsuccessful scans. For one fixed length bar codes, set both Length 1 and Length 2 to the same length. This specifies a single length for valid bar codes. For two fixed length bar codes, set Length 2 to the shorter length and Length 1 as the longer length. The range for Length 1 is 0 to 99. The default is 5. The range for Length 2 is 0 to 99. The default is 55.

Configuring MSI Bar Codes

MSI is a linear bar code for numeric data. Use the *Printer Setup Application* to configure the MSI (Modified Plessey) bar code scanner options below.

Select	To
Enabled	Allows the scanner to scan MSI bar codes.
Use 2 Check Digits	Tells the number of check digits that MSI bar codes should have. Check digits are not always returned with the data. If you choose two check digits, you must choose a check digit algorithm.
Transmit Check Digit	Tells the scanner to return the check digit with the data when an MSI bar code is scanned.
Mod 10/11 Check Digit Scheme	Tells which algorithm to use to ensure the integrity of a two-check digit MSI bar code.
Length 1	Sets the length(s) for MSI bar codes. Lengths include check digits.
Length 2	For variable length bar codes, set both Length 1 and Length 2 to 0. For a variable range, set Length 1 to the lower limit and Length 2 to the upper limit. Specifying a range of lengths increases the likelihood of unsuccessful scans. For one fixed length bar codes, set both Length 1 and Length 2 to the same length. This specifies a single length for valid bar codes. For two fixed length bar codes, set Length 2 to the shorter length and Length 1 as the longer length. The range for Length 1 is 0 to 99. The default is 6. The range for Length 2 is 0 to 99. The default is 55.

Configuring GS1 DataBar Bar Codes

GS1 DataBar encodes brand identification and dynamic data. This family of bar codes can contain more information than current EAN/UPC bar codes. Seven symbologies encode a Global Trade Item Number (GTIN). Use the *Printer Setup Application* to configure the GS1 DataBar (formerly **Reduced Space Symbology**) bar code scanner options below.

Select	To
Enabled	Allows the scanner to scan GS1 Databar bar codes.
GS1 Limited	Allows the scanner to scan GS1 Limited bar codes.
GS1 Expanded	Allows the scanner to scan GS1 Expanded bar codes.
GS1 to UPC/EAN	Tells the scanner to convert GS1 bar codes into an UPC/EAN bar code.
GS1 to CC-C	Tells the scanner to convert GS1 bar codes into a 2D Composite Component variant of PDF417 bar code. The 2D Composite Component encodes supplementary information.
GS1 CC-A/B	Allows the scanner to scan GS1 CC-A/B (Composite Component) bar codes. The 2D Composite Component encodes supplementary information. The 2D component may be CC-A or CC-B (variant of Micro PDF417), depending on the amount of data being encoded.

Configuring PDF417 Bar Codes

PDF417 is two-dimensional barcode that contains alphanumeric or numeric data. Use the *Printer Setup Application* to configure the PDF417 bar code scanner options below.

Select	To
Enabled	Allows the scanner to scan PDF417 bar codes.
Micro PDF417	Allows the scanner to scan Micro PDF417 bar codes.
Code 128 Emulation	Allows the scanner to scan Micro PDF417 bar codes as Code 128.

Configuring MaxiCode Bar Codes

MaxiCode is a two-dimensional bar code developed by UPS (United Parcel Service, Inc.). Data must be defined in a specific way. Use the *Printer Setup Application* to configure the MaxiCode bar code scanner options below.

Select	To
Enabled	Allows the scanner to scan MaxiCode bar codes.

Configuring Data Matrix Bar Codes

Data Matrix (ECC-200) is a two-dimensional bar code which is made up of square modules arranged within a perimeter finder pattern. There are 24 square symbol sizes available ranging from 10 rows by 10 columns to 144 rows by 144 columns. There are six rectangular symbol sizes available ranging from 8 rows by 8 columns to 16 rows by 48 columns. The symbol size is data dependent. Use the *Printer Setup Application* to configure the Data Matrix bar code scanner options below.

Select	To
Enabled	Allows the scanner to scan Data Matrix bar codes.
Inverse Data Matrix	Allows the scanner to scan Regular, Inverse (light images on a dark background), or Auto Data Matrix bar codes.
Mirrored Data Matrix	Allows the scanner to scan mirrored (never, always, or auto) Data Matrix bar codes.

Configuring QR Code Bar Codes

QR (Quick Response) Code is a two-dimensional bar code, which is made up of square modules arranged in an overall square pattern. A unique finder pattern is located at three corners of the symbol. Four levels of error correction are available, along with a wide range of symbol sizes. Use the *Printer Setup Application* to configure the QR Code bar code scanner options below.

Select	To
Enabled	Allows the scanner to scan QR Code bar codes.
Micro QR Code	Allows the scanner to scan Micro QR Code bar codes.
Inverse QR Code	Allows the scanner to scan Regular, Inverse (light images on a dark background), or Auto QR Code bar codes.

Performing a Scanner Test

Scan a particular barcode. The barcode data is displayed.

Test Current Settings

Tests current scanner settings.

Test All Barcodes

Test all barcodes.

Resetting the Scanner to Defaults

Resets all scanner values to their defaults. For example, any changes made to general scanner settings (aim duration, bi-directional redundancy, etc.) are reset to defaults. Changes made to specific bar codes are also disabled/set to their defaults.

Scannable Bar Codes vs. Printable Bar Codes

Bar codes are separated into one-dimensional and two-dimensional categories.

1D Bar Codes	2D Bar Codes
Codabar Code 16K Code 39 Code 93 Code 128 Interleaved 2of5 MSI UPCA, UPCE, EAN	Data Matrix GS1 DataBar MaxiCode Micro PDF417 PDF417 POSTNET Quick Response

Use the following table to see which bar codes the printer can scan and print:

Bar Code	Scan	Print	Bar Code	Scan	Print
Codabar	√	√	I2of5	√	√
Code 16		√	I2 of 5 with Barrier Bar	√	√
Code 39 (no check digit)	√	√	MaxiCode	√	√
Code 39 (MOD 43 check digit)	√	√	MicroPDF417	√	√
Code 93	√	√	MSI	√	√
Code 128	√	√	PDF417	√	√
Data Matrix	√	√	Postnet		√
EAN 8	√	√	Quick Response	√	√
EAN 8 +2	√	√	UPCA	√	√
EAN 8 +5	√	√	UPCA +2	√	√
EAN 13	√	√	UPCA +5	√	√
EAN 13 +2	√	√	UPCA & Price CD	√	√
EAN 13 +5	√	√	UPCE	√	√
EAN 13 & Price CD	√	√	UPCE +2	√	√
GS1 DataBar/RSS	√	√	UPCE +5	√	√

The RFID printer has been engineered to encode (program) an RFID (Radio Frequency Identification) inlay while printing. RFID inlays contain an embedded programmable microchip and an antenna.

The printer supports EPC Class-1 Generation-2 UHF (C1Gen2) protocol encoding.

The printer pauses (or stops) while encoding the RFID inlay.

Several RFID supplies are available – each chip has different amounts of available programmable EPC data, user memory, access password, and lock code data. Contact your Avery Dennison Representative for more information.



RFID supplies can be damaged by static electricity. Ground yourself by touching metal before handling the RFID supplies.

RFID Overstrike

When the printer cannot program an inlay, it prints an overstrike pattern on the label. The overstrike pattern prevents someone from using a bad label.



RFID Overview

To effectively use RFID, your printer may contain a custom application that uses API commands to encode the RFID data. Refer to the *Avery Dennison API online help file* for more information.

Before using the 6059 RFID printer, you should be familiar with creating Gen2 RFID Data. EPC Gen2 RFID Data contains these fields: EPC Data, User Memory, TID Field, Access Password, Kill Password and Lockcode. Refer to the *Avery Dennison API online help file* for more information.

We recommend using auto calibrate power as a starting point for setting the Read and Write powers. The **Monarch® RFID Printer Setup Utility** also provides Read and Write powers. This Web-based utility is on our web site at

<https://printers.averydennison.com/en/home/resources/service-and-support/rfid-printer-setup-utility.html>

RFID Terms to Know

EPC	The Electronic Product Code, which is a numbering standard for items, similar to the UPC code for bar coding. The EPC is divided into several sections: Header, Manager Number, Object Class, and Serial Number. One of the memory fields reserved for EPC programming. This memory is separate from the user memory and the amount of EPC memory varies with the tag types.
Inlay	A type of media that contains a transponder and is converted for use in Monarch® RFID supplies (tags). Inlays can be made with different types of transponders.
Interrogator	The electronics module that programs the RFID inlays through the antenna.
Read Power	Increase or decreases the strength of the RF field emitted by the printer's antenna to read the RFID inlays.
RF Field	Area inside the printer where the RFID inlay is programmed. The RF field area is controlled by the RFID power level and the antenna. Note: The printer's antenna is located in the printer's top cover.
RFID Reader	An optional device that reads the RFID inlays after they are programmed.
RFID Inlays	Supplies that contain an embedded programmable chip and antenna.
TID	The Transponder Identification Number, which contains the chip type, features, and available custom commands supported for tag authentication.
Transponder	The combination of the embedded programmable chip with an antenna on some type of media (film, paper, etc.).
User Memory	One of the memory fields reserved for user programming. This memory is separate from the EPC memory and the amount of programmable user memory varies with the tag types.
Write Power	Increase or decreases the strength of the RF field emitted by the printer's antenna to program the RFID inlays.

Use the *Printer Setup Application* to adjust any of the RFID options below.

Option	Choices	Default
Read Power	-15 to 23	-15
Write Power	-15 to 23	-15
Auto Calibrate Power	NA	None
Read Tag	NA	None

Auto Calibrate Power

The printer scans the RFID inlay/tag to find the best read/write power settings. The printer may feed several labels during this process.

Use Auto Calibrate Power whenever

- ◆ loading a roll of supply - OR-
- ◆ switching inlay types

We recommend using auto calibrate power as starting point for setting the Read and Write powers. The **Monarch® RFID Printer Setup Utility** also provides Read and Write powers. This Web-based utility is on our web site at

<https://printers.averydennison.com/en/home/resources/service-and-support/rfid-printer-setup-utility.html>


If the auto calibrate power values or RFID Printer Setup Utility values produce errors on your printer, adjust the Read or Write power by one decibel at a time.

Setting the Read Power

The read power setting increases the strength of the RF Field emitted by the printer's antenna. The amount of power to read an RFID inlay. The default is -15. You **must** change the default setting – the default read power is not strong enough to read an inlay.

We recommend using Auto Calibrate Power initially. If the auto power values do not work, adjust the read power by one decibel at a time. Additionally, the *RFID Printer Setup Utility* is available on our web site to determine the optimal read power. Enter the value at the printer.

Select	To
Decrease the setting	If the read power setting is too low, the RFID inlay in the RF field may not be read.
Increase the setting	If the read power setting is too high, adjacent RFID inlays may be read.


 Use caution when increasing or decreasing the Read and Write Powers because the RFID tags may become non-functional!

Setting the Write Power

The write power setting increases the strength of the RF Field emitted by the printer's antenna. The amount of power to encode (program) the RFID inlay. The range is -15 to 23. The default is -15. You **must** change the default setting – the default write power is not strong enough to program an inlay.

We recommend using Auto Calibrate Power initially. If the auto power values do not work, adjust the write power by one decibel at a time. Additionally, the *RFID Printer Setup Utility* is available on our web site to determine the optimal read power. Enter the value at the printer.

Select	To
Decrease the setting	Decrease the setting.
Increase the setting	Increase the setting. The higher the value, the greater the power of the RF Field. If the Write power setting is too high, you may change the data that was programmed into adjacent RFID inlays.

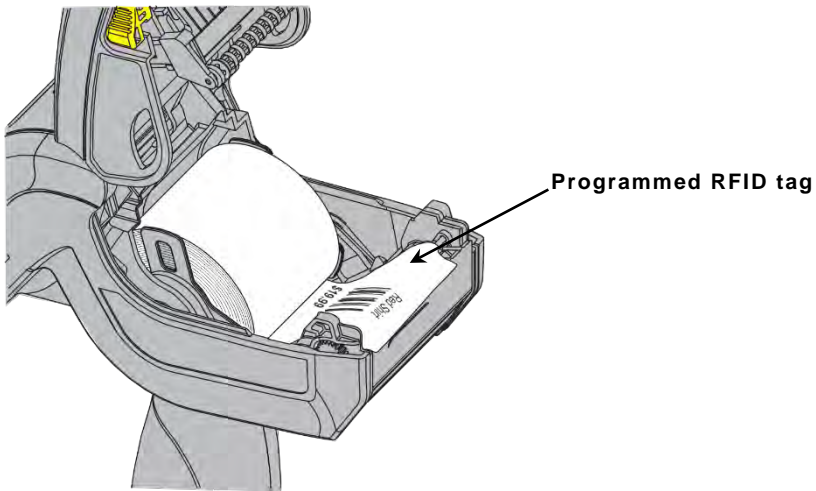
 Use caution when increasing or decreasing the Read and Write Powers because the RFID tags may become non-functional!

Read Tag

Use this option to read what is programmed into an RFID tag.

Before you can read a tag, you must set the read power. The default read power is not strong enough to read an inlay. To read a programmed inlay:

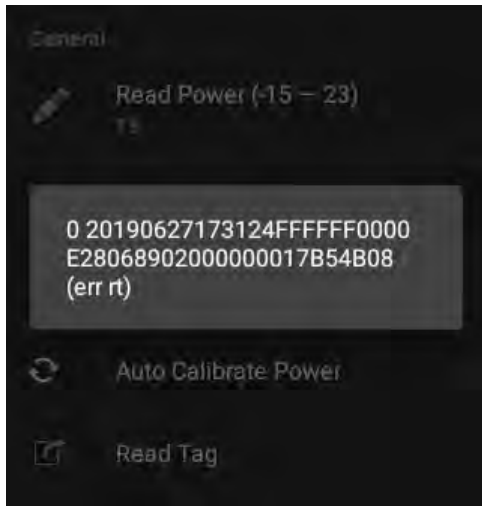
1. Lay the programmed RFID tag inside the printer's supply path as shown.



2. Close the cover.

3. Set the **Read Power**. For example, set the read power to **15**.
4. Select **Read Tag**. Data appears on the display. If you see error 741, the read power may not be strong enough or the inlay is not in the correct place.

For example:



The programmed data is displayed in ASCII Hex format.

The top line displays the EPC data; the bottom line displays the TID data.

The leading 0 before the EPC data is used for error codes.

If the tag cannot be read, you may see "Illegal Command" or a different message from your application developer.

RFID Errors

These errors occur when there is an RFID problem. To correct an RFID error, adjust the Read or Write powers. If the module fails to initialize, contact Technical Support.

When the printer cannot program an inlay, it prints an overstrike pattern on the label. The overstrike pattern prevents someone from using a bad RFID label.

Your application developer may use different messages than the ones shown.

For non-RFID printer error messages, see “Error Messages” in Chapter 5.

Error Code	Description
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727	Too many inlays within the programmable range. Make sure the read power is correct for the selected inlay. If the read power is correct and this error occurs, lower the read power by one and try again.
729	Invalid TID. Invalid inlay. The chip (inlay) embedded in the RFID supply does not support serialized TID. Make sure the RFID supply supports serialized TID. This may also be a bad RFID inlay.
732	No RFID optional hardware installed. A non-RFID printer received a format containing an RFID Data Field. Send the format to an RFID printer with RFID supplies loaded.
735	Error in the RFID module – hardware, software, or firmware. The RFID module may need to be replaced or has become disconnected. If this error continues, call Technical Support. Message will say “reboot”, press button; printer reboots.
736	RFID inlay encoding failed. The RFID inlay was found in the RF Field (area inside the printer where RFID inlay is programmed.), but could not be read or programmed. The RFID module has an error. This may also be a bad RFID inlay. If this error continues, call Technical Support.
738	Inlay communication failure. This error can occur when <ul style="list-style-type: none">◆ The printer cannot read the TID field.◆ Invalid read power. Call technical support. The start encode position may need to be decreased or increased. The read power level may also need to be increased by 1.
740	RFID Tag Failure. The RFID module detected a problem during encoding. Call Technical Support.
741	RFID inlay missing. Inlay not found in RF Field (area inside the printer where RFID inlay is programmed.) This may be a bad RFID inlay. For continuous 741 messages: <ul style="list-style-type: none">◆ The inlay is moving too fast to encode. Decrease the printer’s speed. Try again.◆ Make sure the correct read and write values are set for the selected inlay and try again. Call Technical Support.
744	Inlay locked fail or invalid lock code. The RFID inlay is unable to be programmed, because the lock code is invalid or it is already locked.

Several menus contain printer diagnostic information:

- ◆ Printer Information (battery and sensor values)
- ◆ Print Head Information (number of bad dots, etc.)
- ◆ Service Tools (only accessible by a Service Representative because it requires a separate password)
- ◆ About

If the USB port does not work and/or you cannot access WiFi, make sure those ports are active. See “Using Device Hardening” for more information.

If you can't access the printer because of a lost password/passcode, see [“What if I Forget My Password/Passcode”](#) for more information.

Viewing Battery Voltages and Sensor Values

Use the *Printer Setup Application* to view the battery voltages and sensor values.

Tap **Printer Information** to view:

- ◆ Battery Voltage – the valid range is between 7.0 and 8.4 volts. The printer does not print if the voltage is below 7.0.
- ◆ Backup Battery Voltage
- ◆ Black Mark Calibration Value - the valid range is between 100 (1.00%) and 9500 (95.00%). The typical value will be between 500(5.00%) and 1500(15.00%).
- ◆ Black Mark Voltage - the valid range is between 0 and 5.0
- ◆ Printhead Temperature - the valid range is between 5 and 60 Celsius. The temperature of the printhead depends upon the number of labels printed and the operating environment. If the temperature is greater than 60, the printer does not print.

Provide these values to Technical Support if the printer does not properly calibrate or print.

Viewing Print Head Information

Use the *Printer Setup Application* to check the number of bad dots on the printhead if poor print quality appears.

Tap **Print Head Information** to view:

- ◆ Bad Dot Count – the printer will not print if the number of bad dots exceeds 8?
- ◆ Average Dot Resistance – the printer displays the average printhead dot resistance valid.
- ◆ Dot Resistance Value Array - use your finger to scroll through the dot values. The valid range is between 245 and 455.

Provide these values to Technical Support if they are not within range.

Viewing Printer Totals

Use the *Printer Setup Application* to view the printer's total inches printed, version information, etc. Tap **Print About Label** to print a label containing all the version information listed below. Depending on your loaded supply loaded, you may see two labels print (information prints on two 2"-inch labels).

Tap **About** to view:

- ◆ Application version
- ◆ Model number
- ◆ Serial number
- ◆ Kernel version
- ◆ Core version
- ◆ Android version
- ◆ Web API Version
- ◆ Print engine version
- ◆ Print engine hardware version
- ◆ Scanner revision
- ◆ Display board hardware version
- ◆ Display board software version
- ◆ Total inches printed
- ◆ Total Service inches printed
- ◆ Total high energy inches printed
- ◆ Total high energy service inches printed
- ◆ Impinj (RFID) module version
- ◆ Region (RFID)

Provide this information to Technical Support if you have printer problems.

Updating the Printer

The printer has several methods of updating:

- ◆ Using a thumb drive
- ◆ Using the network
- ◆ Using Over The Air (OTA)

For more information, refer to the *Printer Update Guide*.

Error Reporting

During normal printer operation, you may receive an error message. When an error occurs, a message appears briefly on the display or as a notification message. Select the option you need: Clear Error (clears the error and tries the job again), Abort Print Job (clears the error, cancels the current print job, and does not try again), or Do Nothing (does not clear the error or reprint the job).

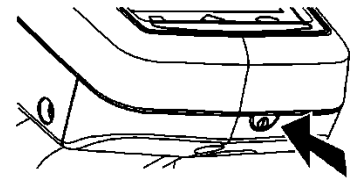
Errors may also be indicated through the LED. The printer's defaults are:

- ◆ Single yellow flash: Bad scan
- ◆ Repeated green flashing: Good scan
- ◆ Repeated blue flashing: insufficient batter power to print
- ◆ Repeated white flashing: out of supply
- ◆ Repeated red flashing: print error

Restarting the Printer Using the Power Button

If you need to restart the printer, you can use the power button.

1. With the printer on, press and hold the power button for approximately eight seconds.
2. Press the power button again. The printer restarts.



Error Messages

Your application developer may use different messages than the ones shown.

Error Code	Description
-------------------	--------------------

5	Label Size Image width is invalid.
12	Image Size Height is invalid.
13	Image Size Width is invalid.
18	More data provided than amount specified in <data min max> tag.
21	Horizontal justification is invalid.
31	Human readable font selection is invalid.
32	Bar code type is invalid.
33	Bar code density is invalid.
102	The print quantity is invalid.
106	The print multiple is invalid.
210	Bar code security level is invalid.
213	PDF417 data is invalid.
223	Bar code option is invalid.
255	Supply type is invalid.
256	Energy setting is invalid.
257	Feed mode is invalid.
258	Supply position is invalid.
259	Contrast is invalid.
260	Print Adjustment is invalid.

Error Code	Description
261	Margin Adjustment is invalid.
262	Speed Adjustment is invalid.
287	Printhead Width specification is out of range.
288	Printer voltage is out of range.
290	Backfeed action is invalid.
291	Backfeed position is invalid.
292	Backfeed distance is invalid.
380	Job request is invalid.
381	The printer cannot connect to the smart device. The maximum number of printers that can connect via Bluetooth to one smart device is 7.
401	Internal software failure.
409	The printer's memory is full.
428	Invalid Batch or Graphic.
574	Check digit could not generate.
601	Failed to image.
614	The field is positioned off the label. This error is only reported when enabled.
615	PDF417 mode is invalid.
616	The printhead has too many bad dots to print.
680	Sound not found. The requested sound was not found on the printer. Refer to the PlaySound method in the <i>SDK documentation</i> .
681	Sound queue full. The requested sound cannot be played because the sound queue is full. Refer to the PlaySound method in the <i>SDK documentation</i> .
682	The sound replay count is invalid. The range is 1 to 8. Refer to the PlaySound method in the <i>SDK documentation</i> .
703	The printer sensed a calibration of different-sized black marks. Make sure the correct supply is loaded.
704	Printer has not sensed a supply mark within the specified number of inches or out of supplies.
706	The printer's motor is jammed or encoder error.
750	Printhead is overheated. Turn off the printer to let the printhead cool. If the error persists, call Technical Support.
751	Printer did not sense a black mark when expected. The supply may be jammed. Reload supply. If the error continues to appear, call Technical Support.
752	Printer sensed a black mark in the wrong place.
753	Printer sensed a black mark that is too long.
755	Printhead is open.
756	The printer is out of supplies. Load supplies and/or clean the supply sensor.
758	Check supply. Either the supply is not seen, or the on-demand sensor is broken (purchase optional). Check for a label jam. Clear the supply path or reload supplies.

Error Code	Description
762	The printer's battery is low. Charge the battery.
765	The printhead has less than 3 bad dots.
766	Backfeed/overfeed error. There is a problem with the backfeed or overfeed distance.
768	Printhead has more than 8 bad dots or is not connected. Make sure the printhead is connected.
790	The printer is busy. If this error persists, call Technical Support.
793	Printer job queue is full.

Hard Printer Errors

Call Technical Support if you receive any error messages greater than 900.

900	Ram test failure.
904	No configuration memory for Native layer.
906	Power failure. Call Technical Support.
907	No configuration memory for Application layer.
909	Configuration memory did not identification check.
910	Warm start.
911	Virgin restart.
930	Error while erasing flash memory.
931	Error while writing flash memory.
932	Error while writing RAM.
940	Flash address is illegal.
1050	Black mark calibration failed. You may need to replace the sensor or motor.
1999	Print Engine crashed and left the status line high.
50	Not supported.
87	Invalid parameter.
111	Buffer overrun.
122	Insufficient buffer.
183	The file already exists.

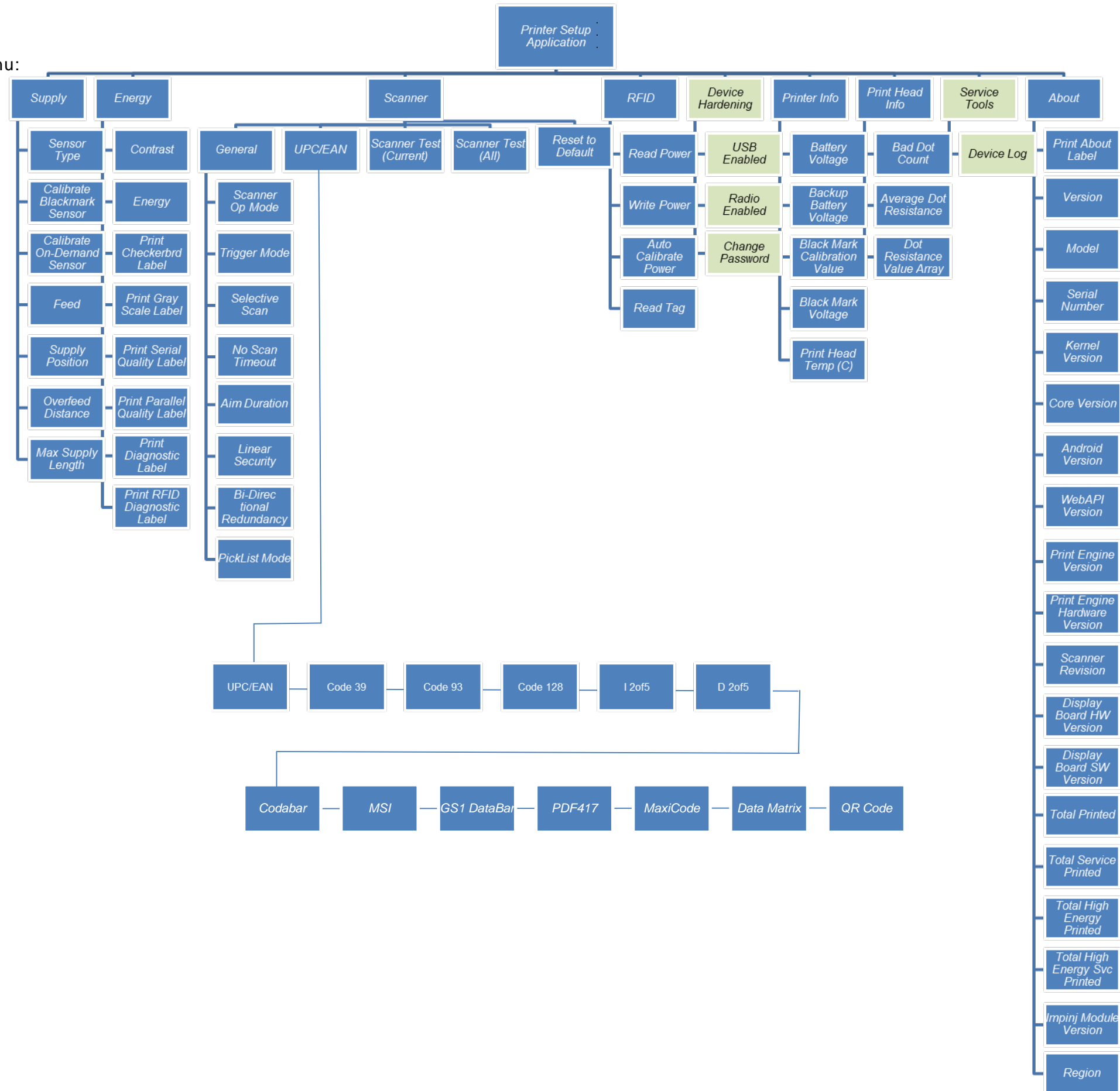
MENU STRUCTURE



The Printer Setup application has the following menu:

Blue items are accessible without a password.

Green items require the Admin password.



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