

Enhanced Features Applicator Interface Option/Maintenance Kit for the ZT411 Printer



Installation Instructions

This kit provides the parts and documentation necessary to install the Enhanced Features Applicator Interface Option/Maintenance Kit in the ZT411 printer.

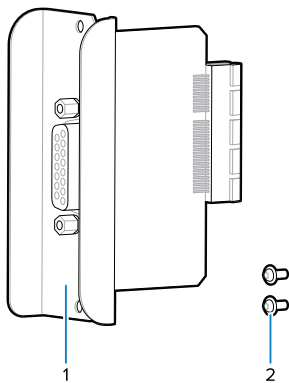
Read these instructions carefully before installing this kit.



CAUTION: A qualified service technician must perform this installation.

Parts List

Before proceeding, verify that your kit contains the following items. To reorder specific parts, go to zebra.com/parts and select your printer model.



Item	Description	Qty
Ref	ZT411 Printer Enhanced Features Applicator Interface Option/Maintenance Kit	1
1	Enhanced features applicator interface	1
2	Hexalobular screw, M3 x 6	2

Tools Required

- Hexalobular (6-lobe, star) wrench set
- Hexalobular screwdriver set
- Anti-static wrist strap and mat

Enhanced Features Applicator Interface Option

The optional enhanced features applicator interface provides a robust electrical signal interface between the printer and the outside world via a standard DB15 connector. The applicator input signals allow an external device to control printer functions including print, pause, feed, and reprint last print. The applicator interface output signals provide handshaking and status information to the external host. The output drive capability has increased from 7 to 50 mA, allowing for easier use across a wider variety of applications.

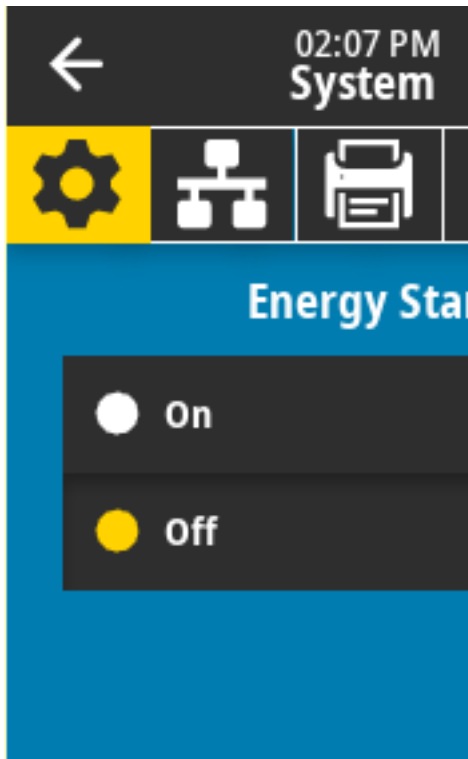
The applicator interface provides 5V DC and 24V DC of power to run the I/O interface and to power small external loads. All output signals are open drain with a light pull-up resistor built in.

The applicator output power supply can sustain momentary short circuits but may be damaged with long-term shorts. There are no user-replaceable fuses on the applicator option the printed circuit board assembly (PCBA).

Energy Star Effect on the Applicator Board

If the Energy Star feature is enabled and the printer goes to sleep, the applicator interface board shuts down. If the applicator board needs to remain on at all times, disable the Energy Star feature in one of the following ways:

- Setting the Energy Star user menu item to **off**:



- Sending the Energy Star disabling SGD command:

! U1 setvar "power.energy_star.enable" "off"

To re-enable Energy Star, send the SGD command with the value "on" or turn it on in the user menu.

Applicator Specifications

Output voltage selections	DB15 Pin 2 (jumper J5 controls output)	0 V DC (for application of external voltage) 5 V, 1 Adc max (default) 24 V, 1 Adc max*
	DB15 Pin 7	24 V, 1 Adc max
User-supplied voltage range when output voltage is set to 0V	0–24 volts	
Pull-up resistor on output	10K +/- 5%	
Pull-up resistor on input	4.7K +/- 5%	
Output signal current sink	<= 50 mA DC	

Figure 1 External DB15 Pin and I/O Schematic

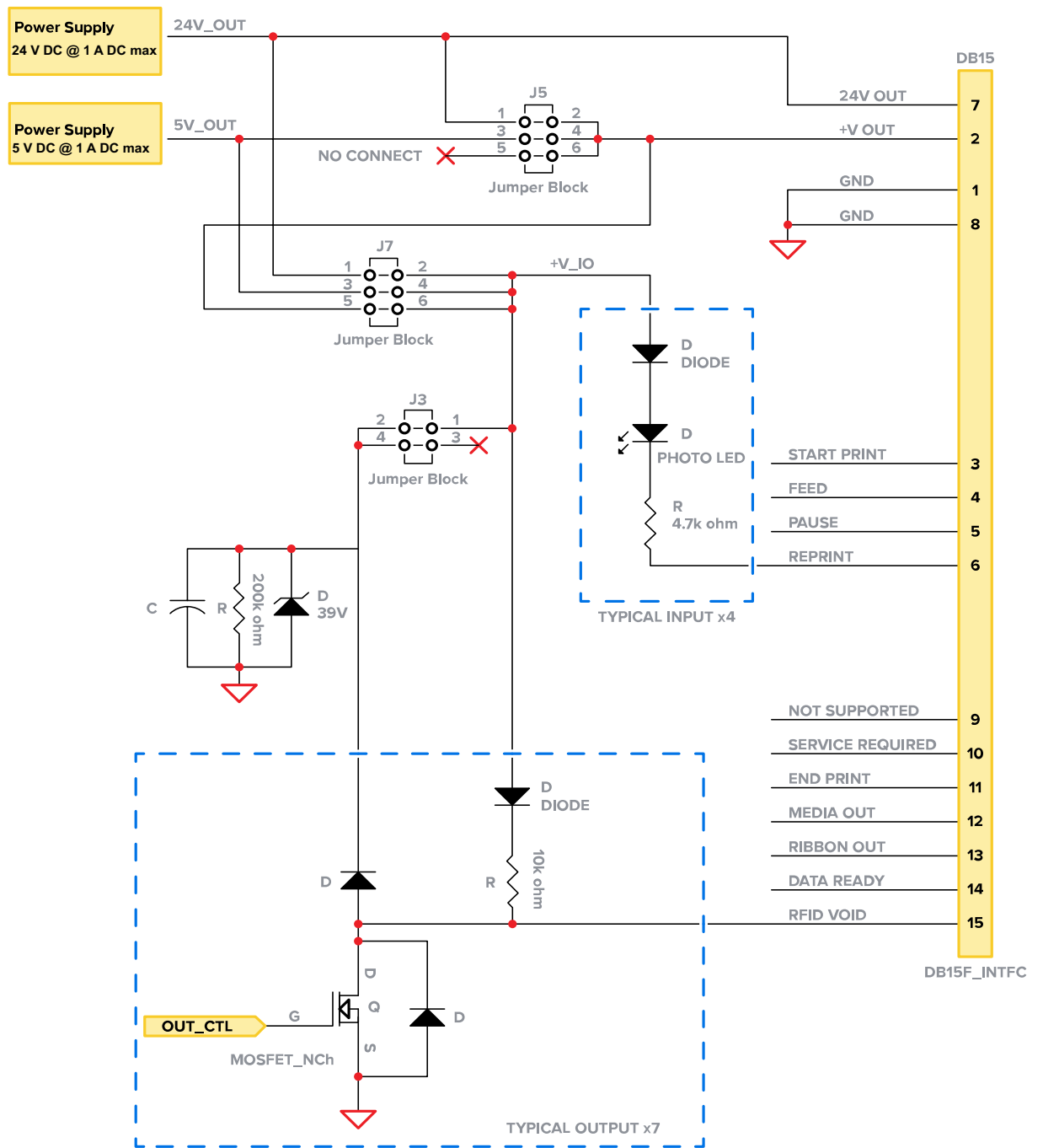
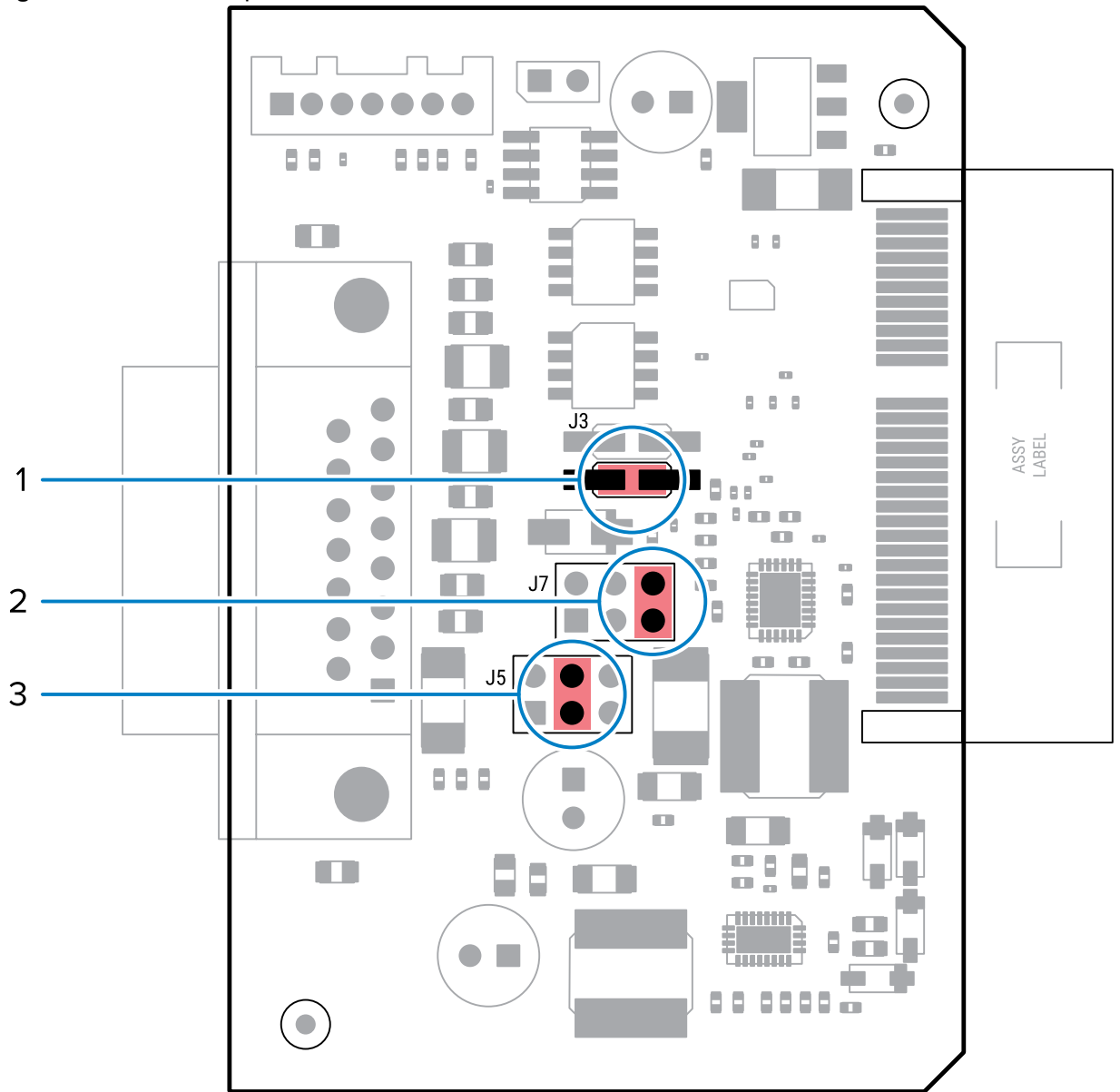


Figure 2 Default Jumper Positions



1	J3 jumper block, default setting (pins 3-4)
2	J7 jumper block, default setting (pins 5-6)
3	J5 jumper block, default setting (pins 3-4)

DB15 Pin Number	DB15F Pin Definition
7	24 Vdc, 1 A max
2	Configurable power out J5 1-2 connected = 24 V out J5 3-4 connected = 5 V, 1 A out (default) J5 5-6 connected = external voltage provided
1,8	GND - not isolated
3-6	Input, pull to GND active state J7 1-2 connected = 24 V interface J7 3-4 connected = 5 V interface J7 5-6 connected = direct connect to pin 2 (default)
9-15	Output, pulls to GND active state Output can sink 50 mA and drive light inductive loads Output pulled high by 10k pull up resistor J7 1-2 connected = 24 V interface J7 3-4 connected = 5 V interface (note 4) J7 5-6 connected = direct connect to pin 2 (default) J3 1-2 connected = Flyback diode connected to V_IO J3 3-4 connected = Flyback diode disconnected from V_IO (default)
Notes	1. 24 V, 5 V foldback under short circuit, recover when short removed. 2. 5 V designed to survive 24 V to 5 V short. 5 V will work correctly when short removed. 3. No current limit on outputs. Damage may occur if current exceeds 100 mA. 4. Output signal will work with 24 V signals even though output is set to 5 V interface voltage. This is due to the blocking diode and default J3 setting.

Pin No.	Signal Name	Signal Type	Description
1	GROUND	Ground	Non-isolated printer ground
2	VOUT	Power	Jumper selectable output voltage, 0 V, 5 V or 24 V. See Configurable Power Out on previous page. 5 V out is the default setting.
3	START PRINT	Input	See Applicator Signals for more information about the start and end print signals. • Pulse Mode—The label printing process begins on the HIGH to LOW transition of this signal if a format is ready. Deassert this signal HIGH to inhibit printing of a new label. • Level Mode—Assert LOW to enable the printer to print if a label format is ready. When deasserted HIGH, the printer completes the label that is printing then stops and waits for this input to be reasserted LOW.
4	FEED	Input	When the printer is idle or paused, assert this input LOW to trigger repeated feeding of blank labels. Deassert HIGH to stop feeding blank labels and register to the top of the next label.
5	PAUSE	Input	To toggle the current Pause state, this input must be asserted LOW for 200 milliseconds, or until the SERVICE REQUIRED output (pin 10) changes state.
6	REPRINT	Input	• If the Reprint feature is enabled, this input must be asserted LOW for the printer to reprint the last label. • If the Reprint feature is disabled, this input is ignored.
7	24 V	Power	Fixed 24 V out.
8	GROUND	Ground	Non-isolated printer ground.
9	Not supported	Output	Not supported
10	SERVICE REQUIRED	Output	Asserted LOW in the following circumstances: • the printhead is open. • the ribbon or media is out. • the printer is paused. • an operational fault occurs. • a Resynch error occurs while the applicator Resynch mode is set to Error mode.

Pin No.	Signal Name	Signal Type	Description
11	END PRINT	Output	See Applicator Signals for more information about the start and end print signals.  A format (^XA ... ^XZ) that does not print will signal that it is being processed. However, it will not trigger an End Print signal because no motion/printing is required. • MODE 0—The applicator port is OFF. • MODE 1—Asserted LOW only while the printer is moving the label forward; otherwise deasserted HIGH. • MODE 2—Asserted HIGH only while the printer is moving the label forward; otherwise deasserted LOW. • MODE 3—Asserted LOW for 20 milliseconds when a label is completed and positioned. Not asserted during continuous printing (default). • MODE 4—Asserted HIGH for 20 milliseconds when a label is completed and positioned. Not asserted during continuous printing.
12	MEDIA OUT	Output	Asserted LOW when there is no media in the printer.
13	RIBBON OUT	Output	Asserted LOW when there is no ribbon in the printer.
14	DATA READY	Output	See Applicator Signals for more information about this signal. • Asserted LOW when sufficient data has been received to begin processing the next label format. • Deasserted HIGH when printing/processing stops after the current label format, either due to a pause condition or the absence of a label format.
15	RFID VOID	Output	• Asserted LOW when the RFID transponder over the antenna is “voided.” • Deasserted HIGH when the end print signal is asserted.

Applicator Signals

The following timing diagrams show how applicator signals function in each applicator mode during the stages of printing a non-RFID label. For more information about applicator signals during RFID operation, see the **RFID Programming Guide 3**.

Figure 3 Applicator Signals (Mode 1)

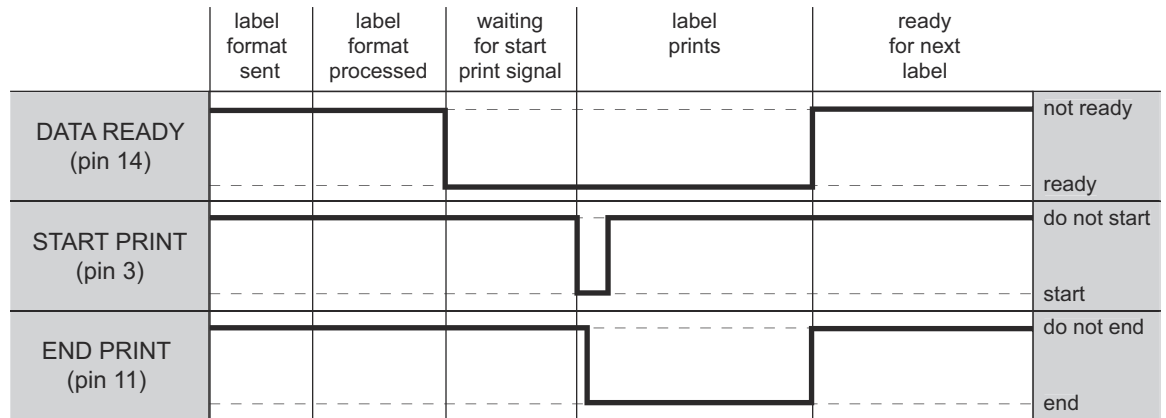


Figure 4 Applicator Signals (Mode 2)

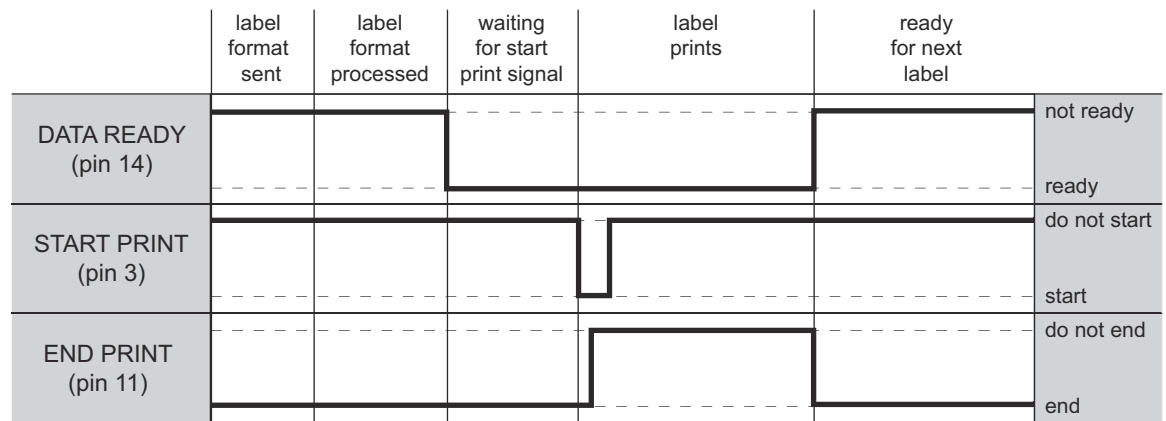


Figure 5 Applicator Signals (Mode 3)

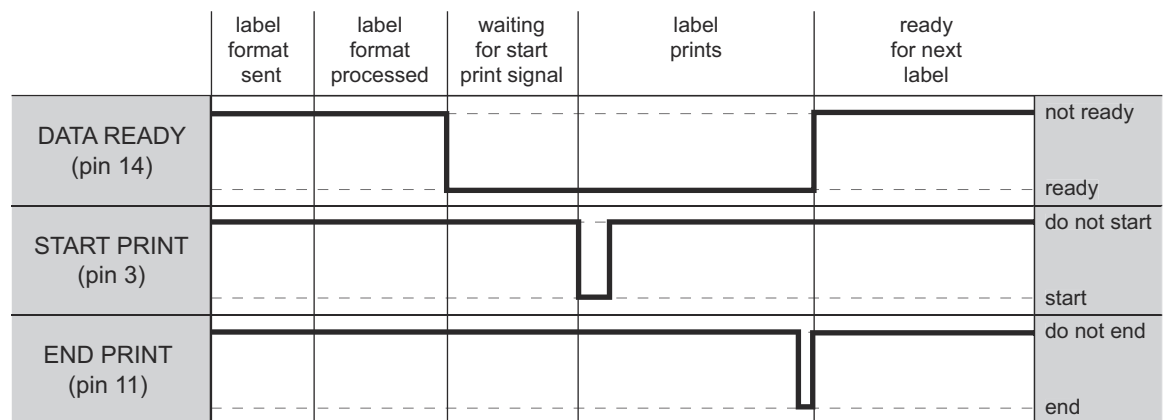
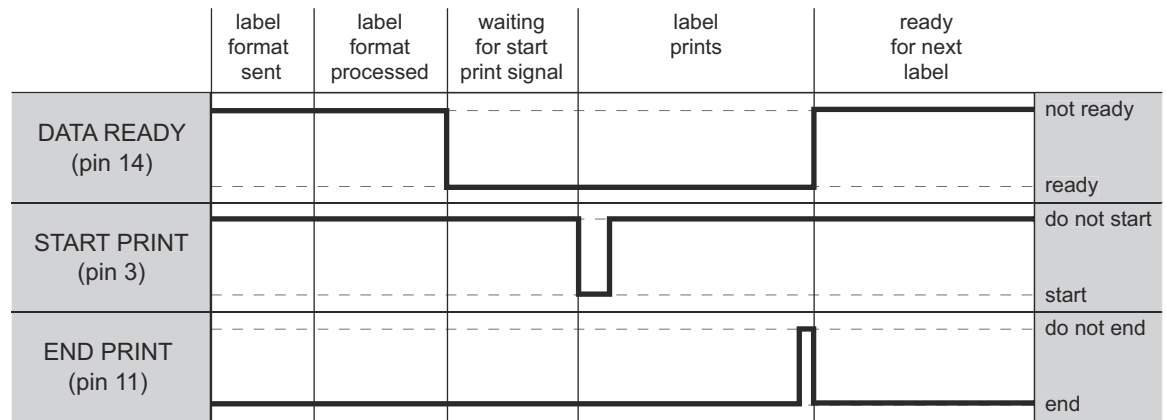


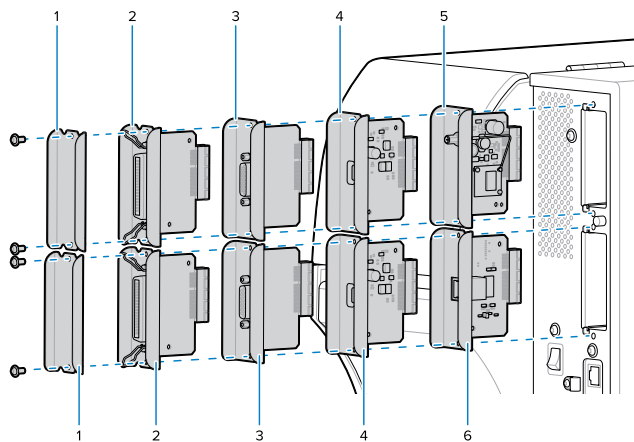
Figure 6 Applicator Signals (Mode 4)



Remove the Old Option Card or Cover Plate

1. Verify the slots that can be used for the various option cards.

Figure 7 Option Card Locations



1	Blank cover
2	Parallel port
3	Enhanced features applicator interface
4	Ethernet
5	Wireless (only in this location)
6	Internal print server IPV4 (only in this location)

Are you replacing an existing option card?

If...	Then...
Yes	Go to Remove the Old Option Card on page 11.
No	Go to Remove the Cover Plate on page 11.

Remove the Old Option Card

- 1. Turn off (O) the printer and disconnect it from the power source before performing the following procedure.



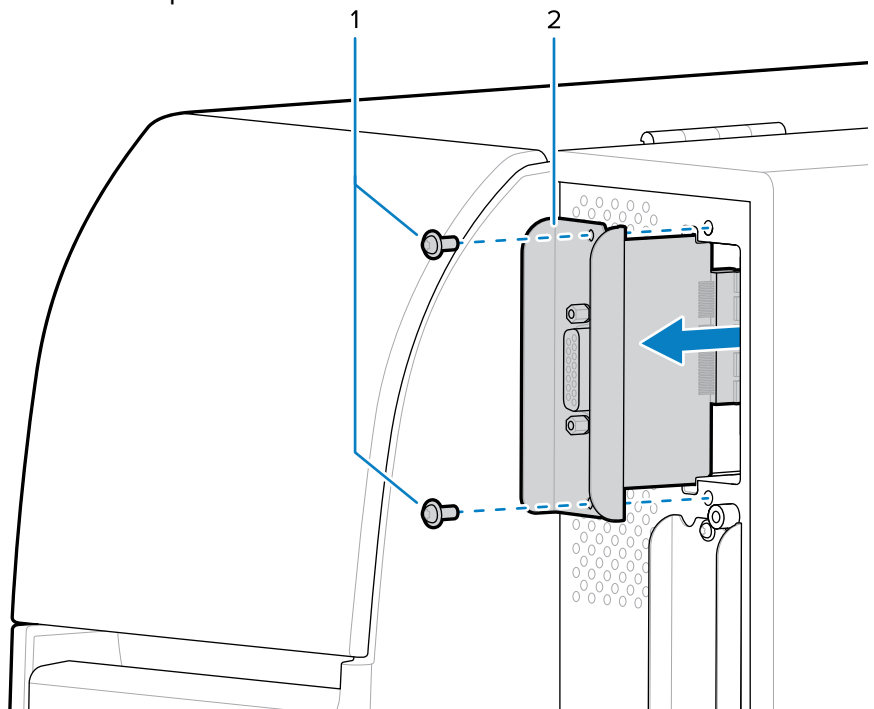
Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.



Connect yourself to an anti-static device.

- 2. Remove the option card by removing the two mounting screws from the top and bottom slots.

Figure 8 Remove the Option Card



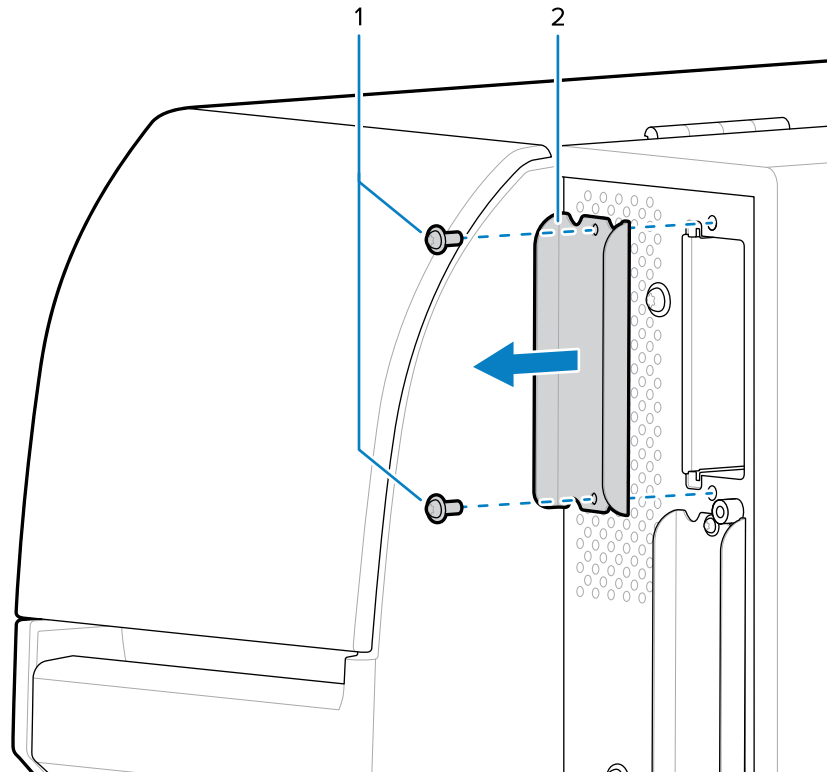
1	Mounting screws (2)
2	Option card

- 3. Slide the option card out of the printer.
- 4. Go to [Install the New Enhanced Features Applicator Interface](#).

Remove the Cover Plate

- 1. Remove the blank cover covering the top slot by removing the two mounting screws.

Figure 9 Remove the Blank Cover



1	Blank cover
2	Mounting screws (2)

2. Go to [Install the New Enhanced Features Applicator Interface](#).

Install the New Enhanced Features Applicator Interface



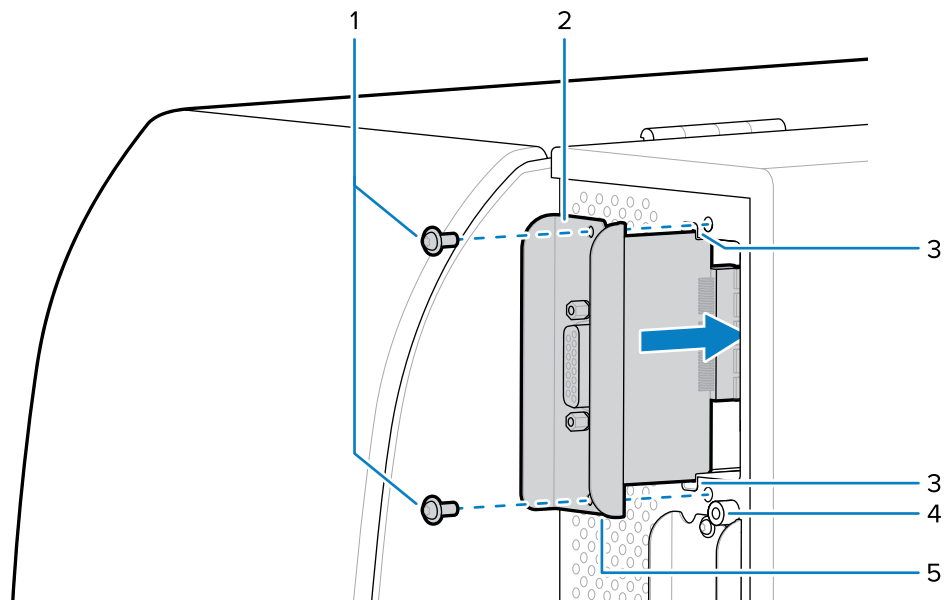
Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.



Connect yourself to an anti-static device.

1. Make sure the enhanced features applicator interface option board is configured according to your requirements.
2. Align the applicator option card with the option card guide slots in the top or bottom slot of the printer.

Figure 10 Install the Enhanced Features Applicator Interface Card



1	Mounting screws (2)
2	Enhanced features applicator interface option card
3	Option card guide slots (2)
4	Locating post
5	Locating notch

3. Slowly slide the enhanced features applicator interface card into the printer until it stops.
4. Ensure that the option card connector is aligned with the main logic board connector, and then push it in on the top and bottom until it is against the printer.
5. Install the two mounting screws.
6. Reconnect the AC power cord and all data cables, and then turn on (I) the printer.

Resume Operation with the New Option Board

1. If necessary, change your Energy Star setting, see [Energy Star Effect on the Applicator Board](#).
2. Open the media side cover.
3. Unlatch the toggle bar handle, reinstall the media and ribbon, and close and latch the toggle bar handle.
4. Close the media side cover.
5. Turn on (I) the printer.

The installation is complete.
