Applicator Interface Option/Maintenance Kit for ZT600 Series and ZT411/ZT421 Printers

This kit includes the parts and documentation necessary to install the Applicator Interface Option/Maintenance Kit in the ZT600 Series and ZT411/ZT421 Printers.

Read these instructions thoroughly before installing this kit.

Caution • A qualified service technician must perform this installation.

Parts List

Before proceeding, verify that your kit contains the items for your printer listed in Table 1 below.

Figure 1 • Kit Contents

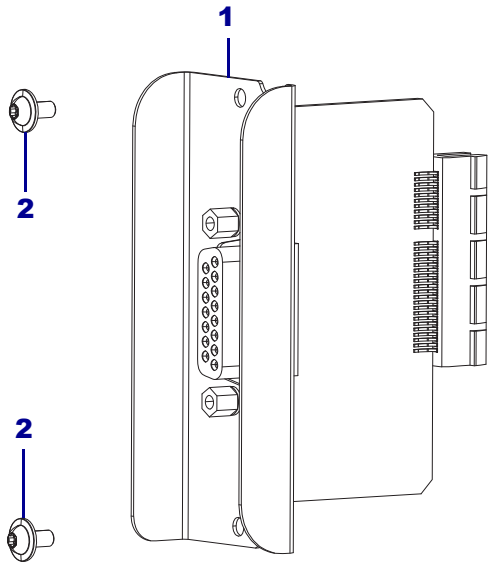

Table 1 • Parts List

✓	Item	Description	Qty
	Ref	ZT600 Series and ZT411/ZT421 Printers Applicator Interface Option/Maintenance Kit	1
	1	Applicator Interface	1
	2	Hexoglobular Screw, M3 × 6	2

To reorder specific parts, navigate to http://www.zebra.com/parts, and select your printer model.

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Tools Required

Tools • You need these tools to complete this procedure:

- ❑ Metric Hexoglobular Wrench Set
- ❑ Hexoglobular Screwdriver Set
- ❑ Antistatic Wriststrap and Mat

Applicator Interface Option

The optional Applicator Interface provides a robust electrical signal interface between the printer and the outside world via a standard DB15 connector (see Figure 2 on page 5). The applicator **input** signals allow an external device to control when the printer prints. The applicator **output** signals provide handshaking and status information to the external host.

The applicator provides 5V or 24V of power to run the I/O interface and to power small external loads. All output signals are open collector with a light pull-up resistor built in. All signals and power are galvanically isolated from the host printer. The applicator provides a jumper to connect printer and applicator grounds, if required, but the default setting is isolation.

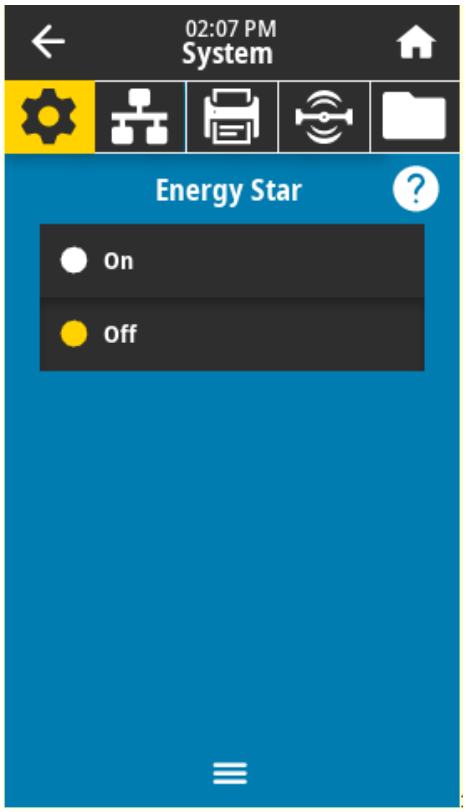
The applicator output voltage can be set to three levels: 0Vdc, 5Vdc and 24Vdc. The 0V setting can be used if the application requires a unique voltage—12V for example, but 12V must be provided externally. Setting of voltages (0V, 5V, 24V) is done through Set-Get-Do (SGD) command. (See *Applicator Specifications* on page 4.)

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 PCBA.

Energy Star Effect on the Applicator Board

If the Energy Star feature is enabled and the printer goes to sleep, the applicator 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".

Applicator Specifications

Output voltage selections	• 0 volts • 5 Vdc (+/- 10%) <= 1.0 Adc • 24 volts (+/- 10%) <= 0.4 Adc Set by the following SGD command: `! U1 setvar "device.applicator.voltage" "X"` where X is 0, 5, or 24 to indicate the desired voltage. The printer must be power cycled before the setting takes effect. **Note •** A high-voltage lockout jumper installed on the applicator interface PCBA prevents the output from going above 5V, even if the SGD is sent for 24V output. This precaution prevents accidental damage to external equipment. The jumper must be repositioned to allow for 24V operation. The default setting is for 5V operation.
Pull-up resistor on output	10K +/- 5%
Pull-up resistor on input	4.7K +/- 5%
Output signal current sink	<= 7 mAdc
User-supplied voltage range when output voltage set to 0V	0–24 volts

Applicator Option External Pinouts

Figure 2 • DB15 Connector

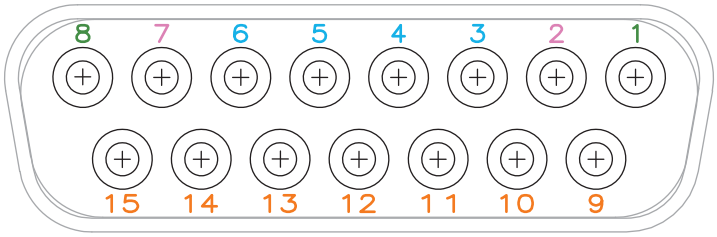
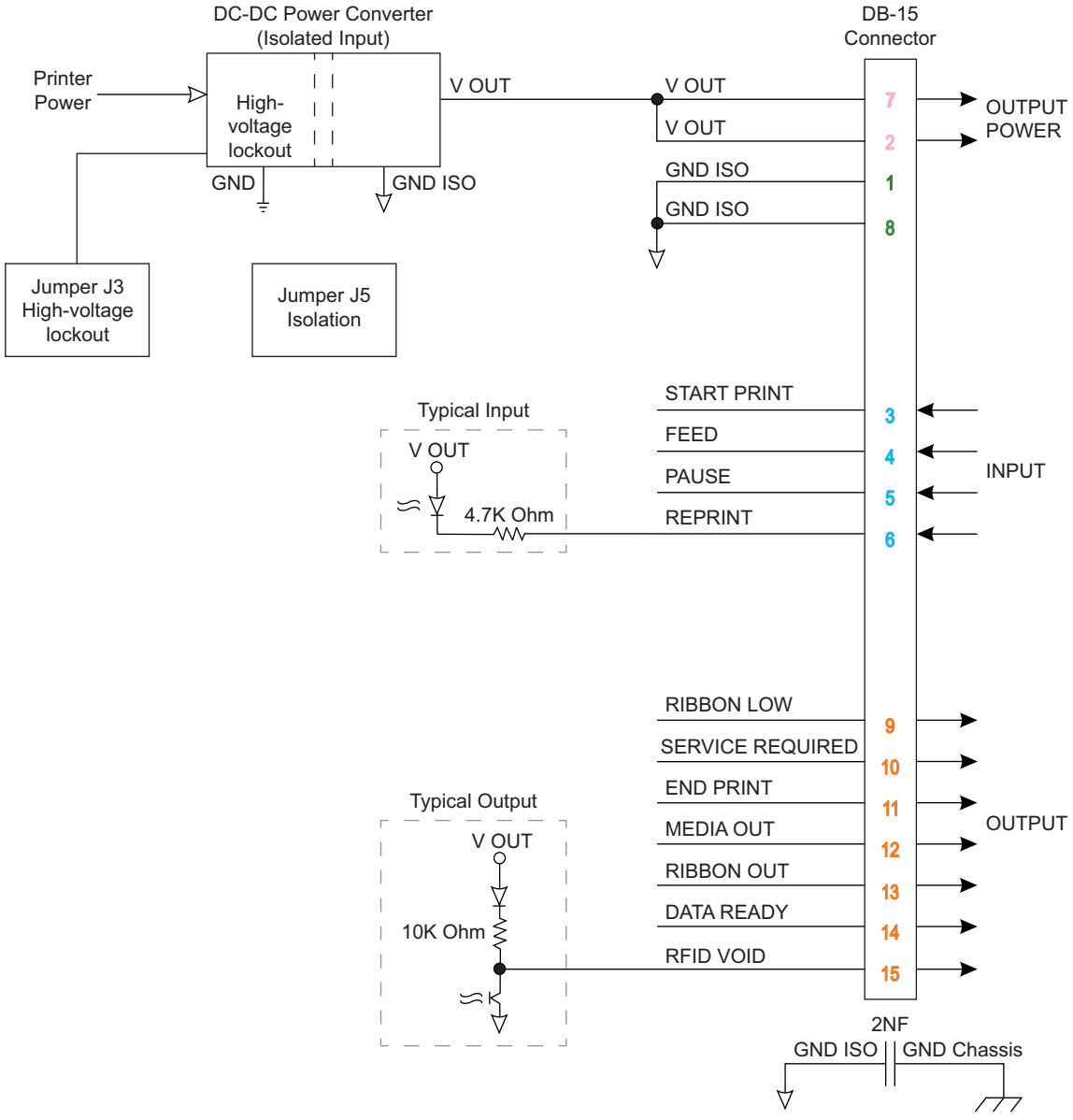
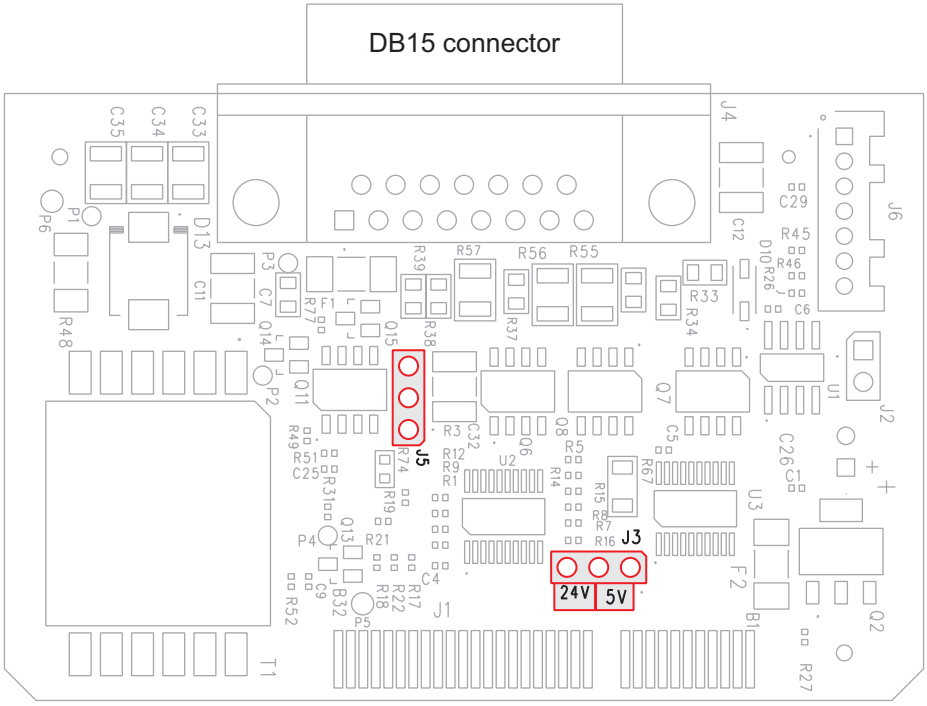


Figure 3 • External Pinouts

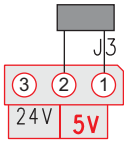
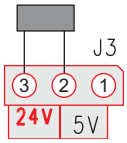


Jumper Configuration

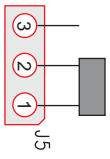
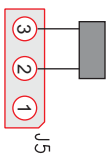
Figure 4 • Location of Jumpers J3 and J5 on the Applicator Board



Jumper J3 — High-Voltage Lockout

	**Pins 1 and 2 connected** V out = 5V max (default)
	**Pins 2 and 3 connected** V out = 0V, 5V, 24V

Jumper J5 — Ground Isolation Jumper

	**Pins 1 and 2 connected** isolated (default)
	**Pins 2 and 3 connected** not isolated

Applicator Interface Pin Configuration

Table 2 • Applicator Interface Connector Pin Configuration

Pin No.	Signal Name	Signal Type	Description
1	GROUND ISOLATED	Ground	Using jumper J5, this pin can be configured as isolated or non-isolated from the printer circuit ground (see *Jumper Configuration* on page 6). Default position is set to isolation.
2	VOUT	Power	Programmable output voltage of 0V, 5Vdc, 24Vdc. Voltage selection done by SGD command. Depending on configuration, jumper J3 will lock out 24V operation (see *Jumper Configuration* on page 6). If set in 5V position, only 0V and 5V will be available. If set to 24V position, 0V, 5V and 24V will be available, depending on the SGD command. Default is 5V configuration.
3	START PRINT	Input	See *Applicator Signals* on page 9 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 has been 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 to cause the printer to reprint the last label. • If the Reprint feature is disabled, this input is ignored.
7	VOUT	Power	Programmable output voltage of 0V, 5Vdc, 24Vdc. Voltage selection done by SGD command. Depending on configuration, jumper J3 will lock out 24V operation (see *Jumper Configuration* on page 6). If set in 5V position, only 0V and 5V will be available. If set to 24V position, 0V, 5V and 24V will be available, depending on the SGD command. Default is 5V configuration.

Table 2 • Applicator Interface Connector Pin Configuration (Continued)

Pin No.	Signal Name	Signal Type	Description
8	GROUND ISOLATED	Ground	Using jumper J5, this pin can be configured as isolated or non-isolated from the printer circuit ground (see *Jumper Configuration* on page 6). Default position is set to isolation.
9	RIBBON LOW	Output	Asserted LOW if the Supplies Warning feature is enabled and the amount of ribbon remaining on the supply spindle is below the threshold level.
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
11	END PRINT	Output	See *Applicator Signals* on page 9 for more information about the start and end print signals. **Note** • 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**—(Default) Asserted LOW for 20 milliseconds when a label is completed and positioned. Not asserted during continuous printing. • **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* on page 9 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 5 • Applicator Signals (Mode 1)

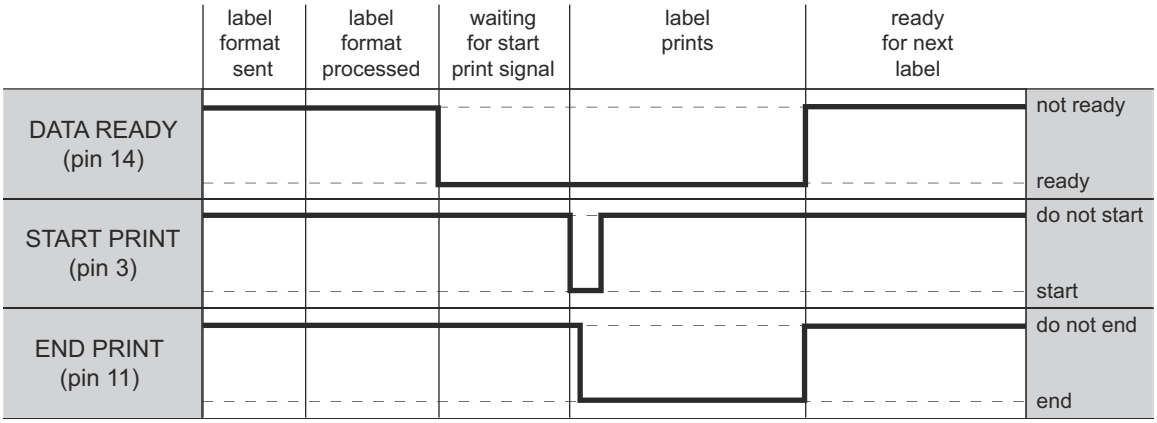


Figure 6 • Applicator Signals (Mode 2)

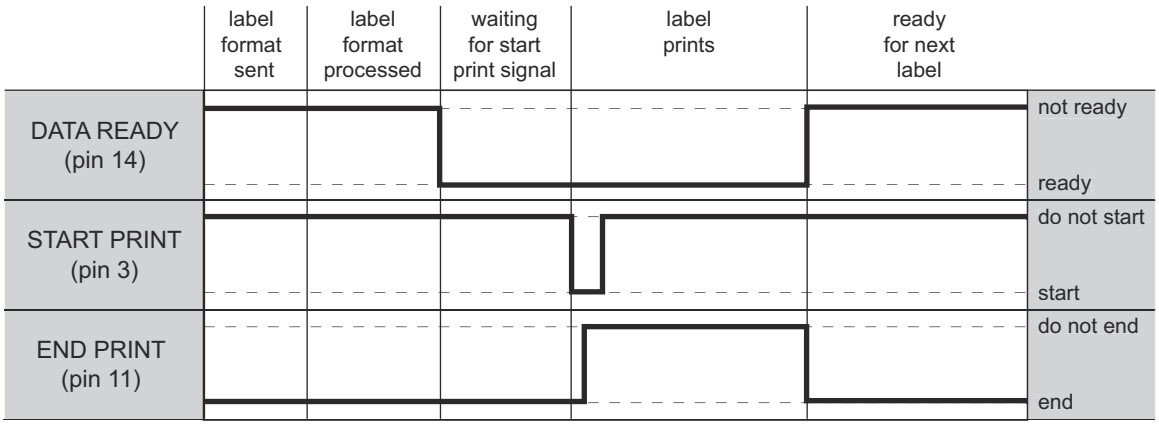


Figure 7 • Applicator Signals (Mode 3)

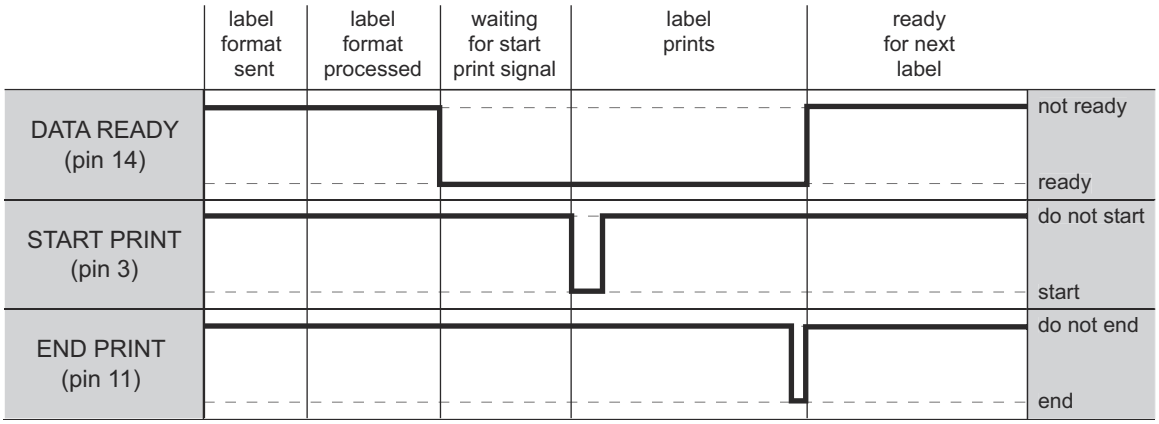
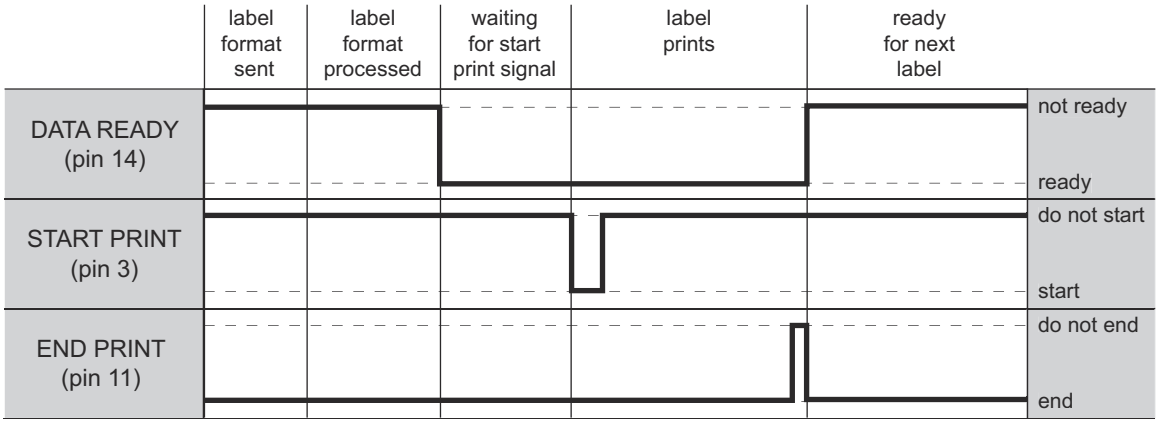


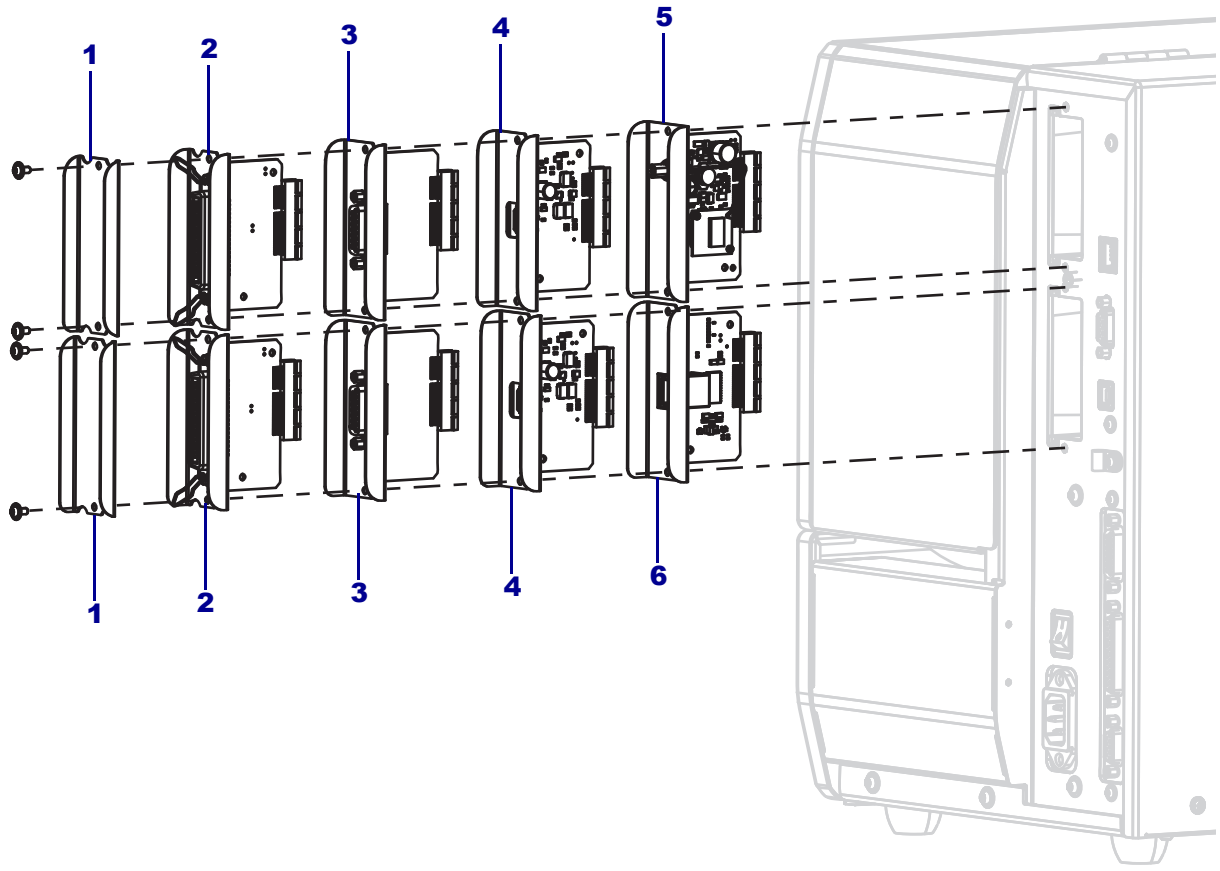
Figure 8 • Applicator Signals (Mode 4)



Remove the Old Option Card or Cover Plate

1. See Figure 9 to verify the slots that can be used for the various option cards.

Figure 9 • Option Card Locations (ZT600 Shown)



1	Blank cover
2	Parallel port
3	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 12.
No	Go to *Remove the Cover Plate* on page 13.

Remove the Old Option Card

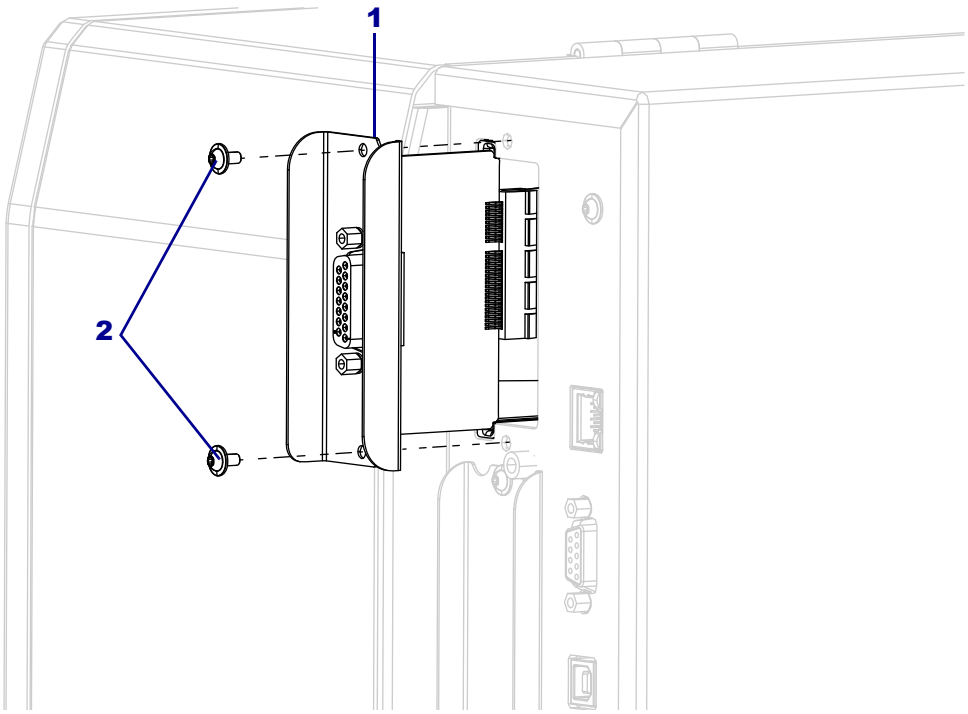
1. **Caution** • Turn Off (**O**) the printer and disconnect it from the power source before performing the following procedure.

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

   Connect yourself to an antistatic device.

3. See Figure 10. Remove the two option card mounting screws from the top or bottom slots.

Figure 10 • Remove the Option Card (ZT600 Shown)



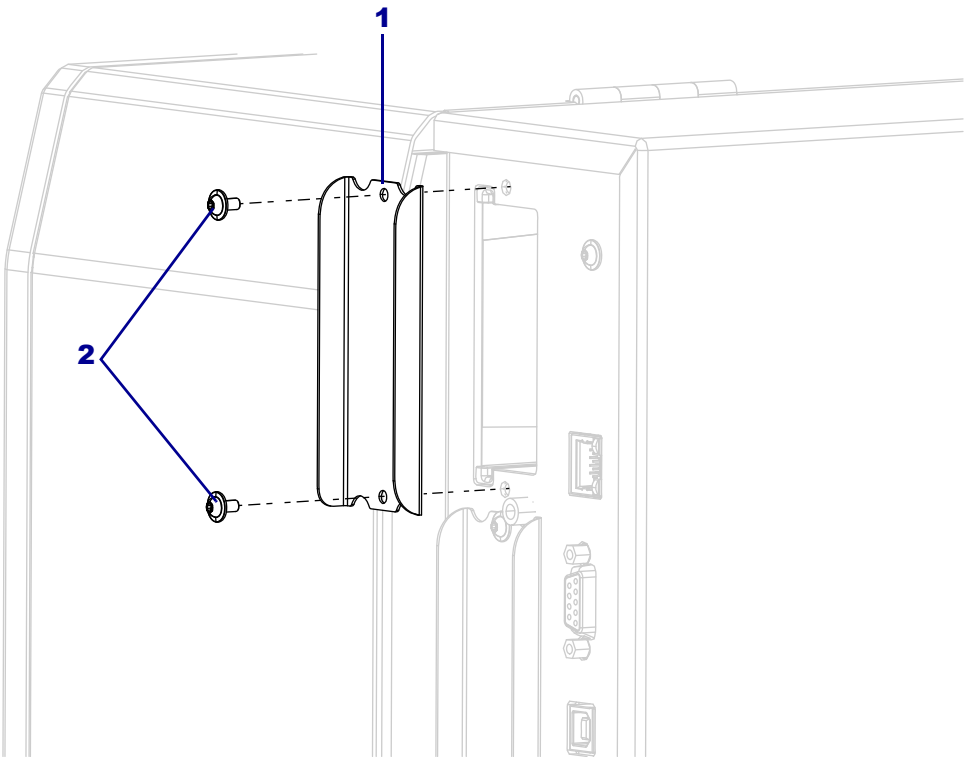
1	Option card
2	Mounting screws (2)

4. Slide the option card out of the printer.
5. Go to *Install the New Applicator Interface* on page 14.

Remove the Cover Plate

1. See Figure 11. Remove the blank cover covering the top slot by removing the two mounting screws.

Figure 11 • Remove the Blank Cover (ZT600 Shown)



1	Blank cover
2	Mounting screws (2)

2. Go to *Install the New Applicator Interface* on page 14.

Install the New Applicator Interface

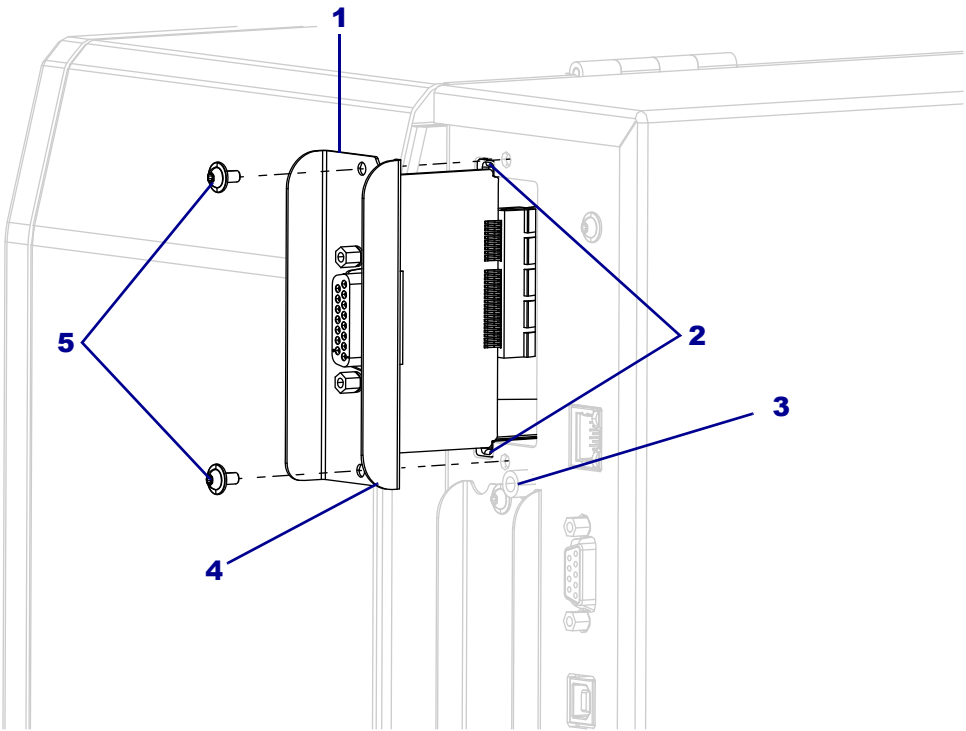
1. **Caution •** Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

   Connect yourself to an antistatic device.

2. Make sure the applicator interface option board is configured according to your requirements.
   a. Verify that the high-voltage lockout jumper matches your voltage requirements. See *Jumper J3 — High-Voltage Lockout* on page 6.
   b. Verify that the ground isolation jumper is set to match your requirements. See *Jumper J5 — Ground Isolation Jumper* on page 6.

3. See Figure 12. Align the applicator option card with the option card guide slots in the top or bottom slot of the printer.

Figure 12 • Install the Applicator Interface Card (ZT600 shown)



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

4. Slowly slide the applicator interface card into the printer until it stops.
5. 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.
6. Install the two mounting screws.
7. 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* on page 3.
2. If necessary, change the voltage using the SGD command, see *Applicator Specifications* on page 4.
3. To see your changes, you must power cycle the printer.
4. Open the media side cover.
5. **Caution •** While performing any tasks near an open printhead, remove all rings, watches, hanging necklaces, identification badges, or other metallic objects that could touch the printhead.

   Unlatch the toggle bar handle, reinstall the media and ribbon, and close and latch the toggle bar handle.
6. Close the media side cover.
7. Turn on (**I**) the printer.

The installation is complete.

Printed in China
on chlorine-free
recycled paper.

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