



Applicator Interface Board

Installation Instructions

This kit includes the applicator interface board assembly and the documentation necessary to install it in the *XiIIIPlus*TM Series printers. Read these instructions thoroughly prior to kit installation.



Caution • A qualified service technician must perform this installation.

Prepare for Installation

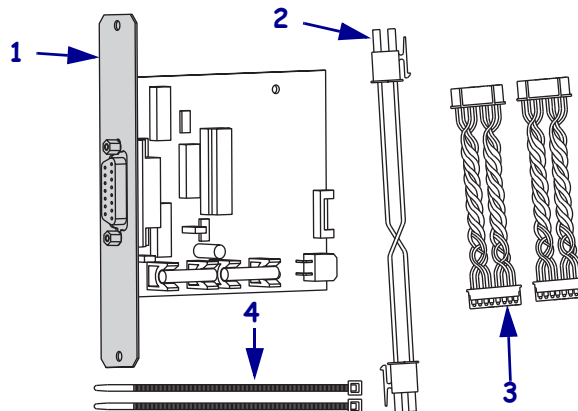
Parts List

Table 1 • Kit Parts List

✓	Item	Qty	Part Number	Description
	Ref	1	49872-099M	Applicator Interface Kit (5V)
	Ref	1	33361-099M	Applicator Interface Kit (24-28V)
	1	1	<i>N/A</i>	Applicator Interface Board (5V)
	2	1	<i>N/A</i>	Power Cable
	3	1	<i>N/A</i>	SP Communication Cable
	4	2	HWQ06020	Cable Tie, 0.09 W × 3.62 L (sold in quantities of 20)

Bold = Part available for purchase.
Italic = Part not available for purchase, listed and shown for reference only.

Figure 1 • Parts List



Reference Material

- *XiIIIPlus-Series*™ Maintenance Manual
- *XiIIIPlus-Series* User Guide
- *XiIIIPlus-Series* User Guide CD

Tools Required



Tools • You need these tools to complete this procedure:

- Phillips Screwdriver Set
- Metric Hex Key (Allen Wrench) Set
- Standard Nutdriver Set
- Antistatic Wrist Strap and Mat

Remove the Electronics Cover



Note • Retain all parts removed during disassembly, unless otherwise directed.

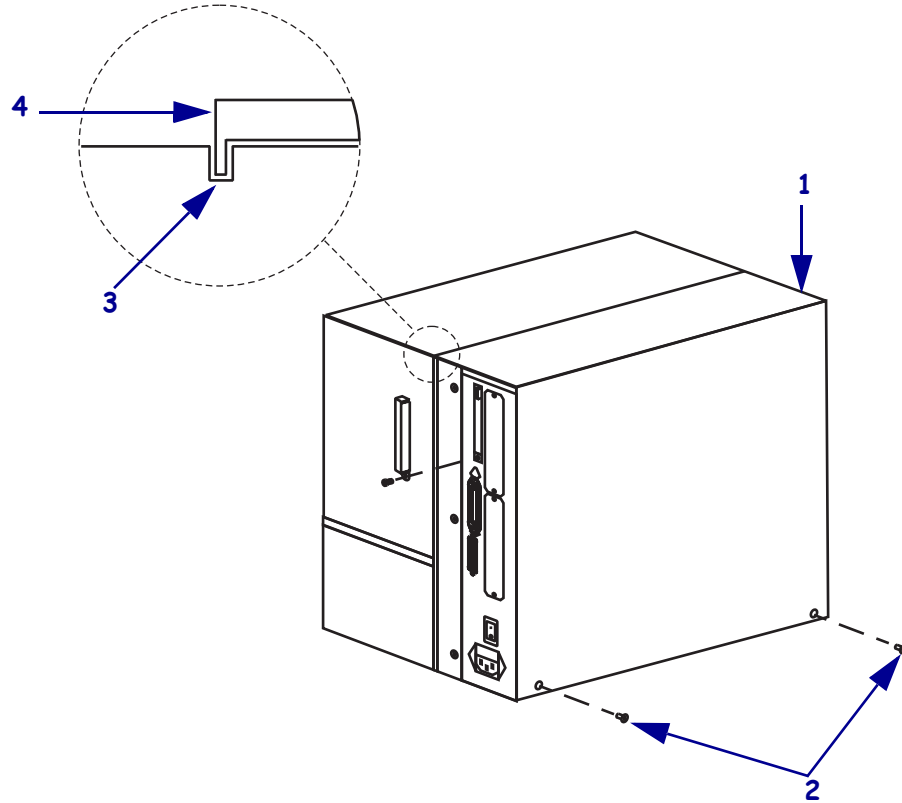


1. **Caution** • Turn off (O) the printer and disconnect it from the power source before performing the following procedure.

Turn off (O) the printer and disconnect the AC power cord and all data cables.

2. See [Figure 2](#). To remove the electronics cover, remove the two mounting screws securing it. Lift up the cover beginning with the rear corner.

Figure 2 • Remove the Electronics Cover



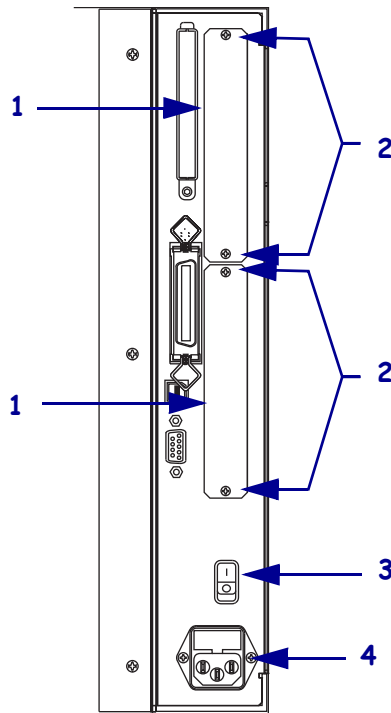
1	Electronics cover
2	Electronics cover mounting screws (2)
3	Channel
4	Lip of electronics cover

Install Applicator Interface Board

- Does this printer have an existing applicator interface board installed?

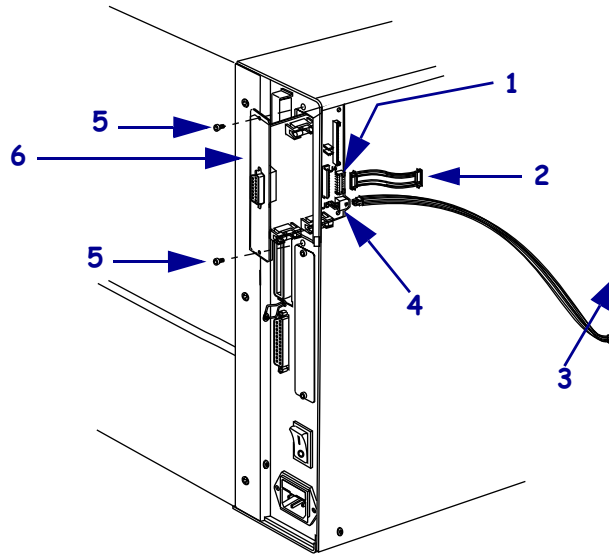
If...	Then...
No	<ol style="list-style-type: none"> See Figure 3. Remove one of the option board cover plates. Properly discard the option board cover plate but retain the screws for future use. Continue with step 2 on page 6.
Yes	<ol style="list-style-type: none"> See Figure 4 on page 5 or Figure 5 on page 6 depending on which applicator board you currently have installed. Disconnect the communication data cable from the applicator interface board. Disconnect the power cable from the applicator interface board. Remove the applicator interface board mounting screws. Remove the old applicator interface board through the rear access panel. Properly discard the old applicator interface board but retain the screws for future use. Continue with step 2 on page 6.

Figure 3 • Locate Option Board Cover Plate



1	Option board cover plate
2	Mounting screws (2 each plate)
3	AC power on/off switch
4	AC power cord connection

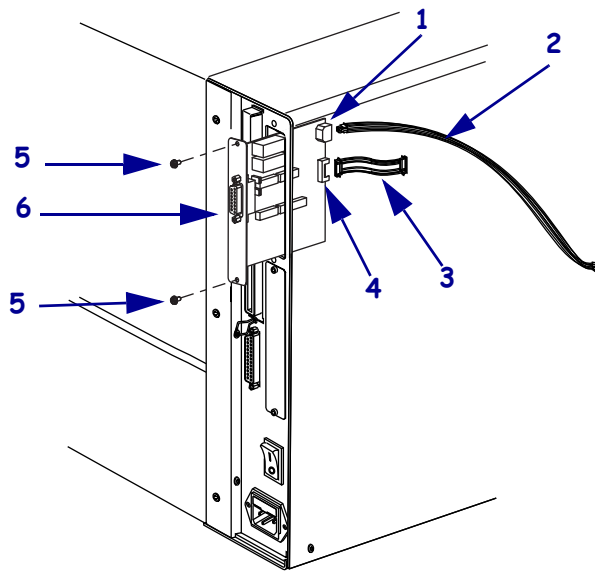
Figure 4 • Install 5V Applicator Interface Board



1	J4 – Applicator data connector
2	SP communication cable (data)
3	Power cable
4	J5 – Power connector
5	Mounting screws (2)
6	Applicator interface board

6 | Applicator Interface Board
Remove the Electronics Cover

Figure 5 • Install 24-28V Applicator Interface Board



1	J3 – Power connector
2	Power cable
3	SP communication cable (data)
4	J1 – Applicator data connector
5	Mounting screws (2)
6	Applicator interface board

2. Install the applicator interface board assembly using the two screws previously removed.

3. Which applicator interface board are you installing?

If you are installing a...	Then...
5V board	<ol style="list-style-type: none"> a. See Figure 4 on page 5. Connect one end of the data cable to J4 on the applicator interface board. b. For the next few steps, see one of the following for interconnections: <ul style="list-style-type: none"> • <i>XiIIIPlus</i>: Figure 6 on page 8 and Table 2 on page 8 • <i>110XiIIIPlus</i>: Figure 7 on page 9 and Table 3 on page 9 c. Connect the other end of the data cable to one of the open SPI (Serial Peripheral Interface) connectors on the main logic board. d. See Figure 4 on page 5. Connect one end of the power cable to J5 on the applicator interface board. e. Connect the other end of the power cable to one of the open power connectors on the DC power supply board. (See interconnections listed above for your specific printer.) f. Use cable ties to secure the cables as necessary.
24-28V board	<ol style="list-style-type: none"> a. See Figure 5 on page 6. Connect one end of the data cable to J1 on the applicator interface board. b. For the next few steps, see one of the following for interconnections: <ul style="list-style-type: none"> • <i>XiIIIPlus</i>: Figure 6 on page 8 and Table 2 on page 8 • <i>110XiIIIPlus</i>: Figure 7 on page 9 and Table 3 on page 9 c. Connect the other end of the data cable to one of the open SPI (Serial Peripheral Interface) connectors on the main logic board. d. See Figure 5. Connect one end of the power cable to J3 on the applicator interface board. e. Connect the other end of the power cable to one of the open power connectors on the DC power supply board. (See interconnections listed above for your specific printer.) f. Use cable ties to secure the cables as necessary.

Figure 6 • XIIIPlus Interconnections

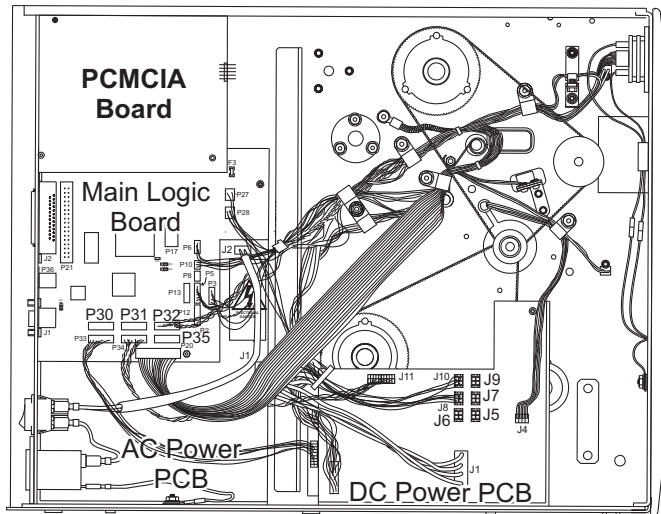


Table 2 • XIIIPlus Interconnections

Main Logic Board Interconnections for XIIIPlus	
Connector	Description
P30	SPI Connector*
P31	SPI Connector
P32	SPI Connector LCD Display Board
P33	SPI Connector Cutter Board
P34	SPI Connector DC Power Supply J11
P35	SPI Connector
DC Power Supply Board Interconnections for XIIIPlus	
J5	5V Power Connector
J6	5V Power Connector
J7	Cutter Option (5V Power Connector)
J8	5V Power Connector
J9	LCD Display Power (5V Power Connector)
J10	J20 Main Logic PCB (5V Power Connector)
Note: J5-J10 have the same output on the DC power supply.	
5V Applicator Interface Board Interconnections for XIIIPlus	
J4	SPI Connector*
J5	DC Power
24-28V Applicator Interface Board Interconnections for XIIIPlus	
J1	SPI Connector*
J3	DC Power

*SPI--Serial Peripheral Interface

Figure 7 • 110XIIIPlus Interconnections

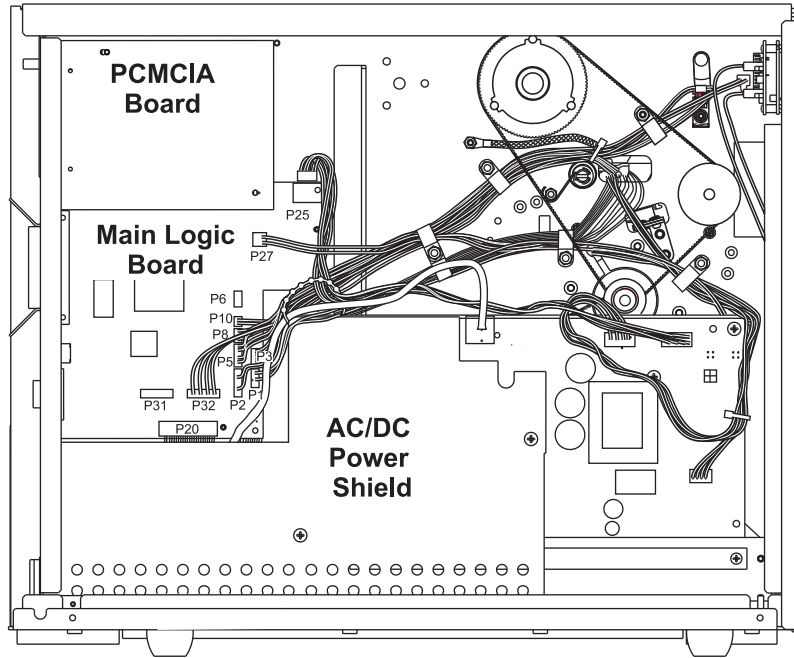


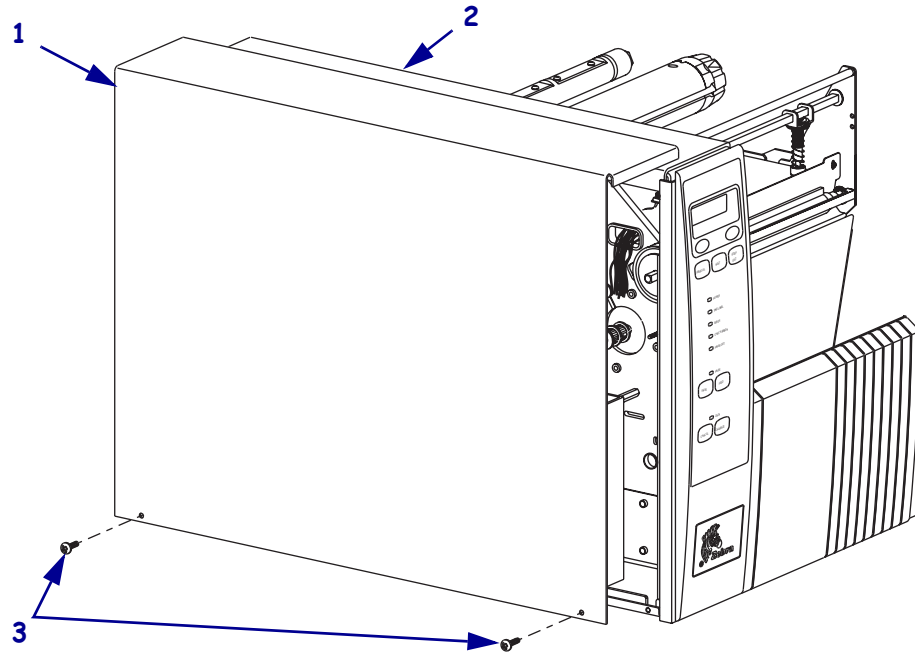
Table 3 • 110XIIIPlus Interconnections

Main Logic Board Interconnections for 110XIIIPlus	
Connector	Description
P30	SPI Connector*
P31	SPI Connector
P32	SPI Connector LCD Display Board
P33	SPI Connector Cutter Board
P34	SPI Connector DC Power Supply J11
P35	SPI Connector
DC Power Supply Board Interconnections for 110XIIIPlus	
J5	5V Power Connector
J6	5V Power Connector
J7	Cutter Option (5V Power Connector)
Note: J5-J7 have the same output on the DC power supply	
5V Applicator Interface Board Interconnections for 110XIIIPlus	
J4	SPI Connector*
J5	DC Power
24-28V Applicator Interface Board Interconnections for 110XIIIPlus	
J1	SPI Connector*
J3	DC Power
*SPI--Serial Peripheral Interface	

Reinstall the Electronics Cover

1. See [Figure 8](#). Reinstall the electronics cover by aligning the cover so that it slips over the main frame.
2. Reinstall the mounting screws to secure the electronics cover.

Figure 8 • Install the Electronics Cover



1	Electronics cover
2	Main frame
3	Mounting screws (2)

3. Reconnect the AC power cord and all data cables.
4. Turn on (I) the printer.
5. The installation is complete.

Applicator Port Pinouts

5V Board

See [Figure 9](#) and [Table 4](#) to identify the pins, signals, and functions for the 5V applicator board port.

Figure 9 • 5V Applicator Board Pinouts

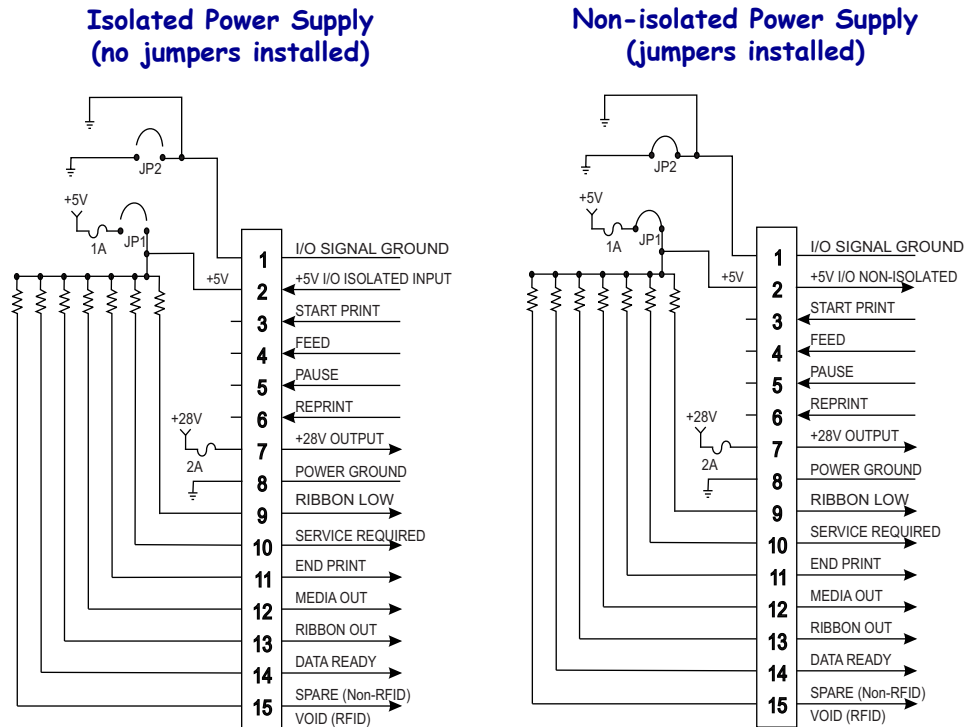


Table 4 • 5V Applicator Interface Connector Pin Configuration

Pin No.	Signal Name	Signal Type	Description
1	I/O SIGNAL GROUND (+5V Return)	I/O Signal Ground	Using jumper JP2, this pin can be configured as isolated or non-isolated from the printer signal ground. See Figure 10 on page 14 for location of jumpers.
2	+5V I/O (Fused at 1 A) Caution • Replace the fuse only with one of the same type and rating.	Power	Using jumper JP1, this pin can be configured as isolated or non-isolated from the Applicator Interface Circuit +5 V Supply. See Figure 10 on page 14 for location of jumpers.

Table 4 • 5V Applicator Interface Connector Pin Configuration (Continued)



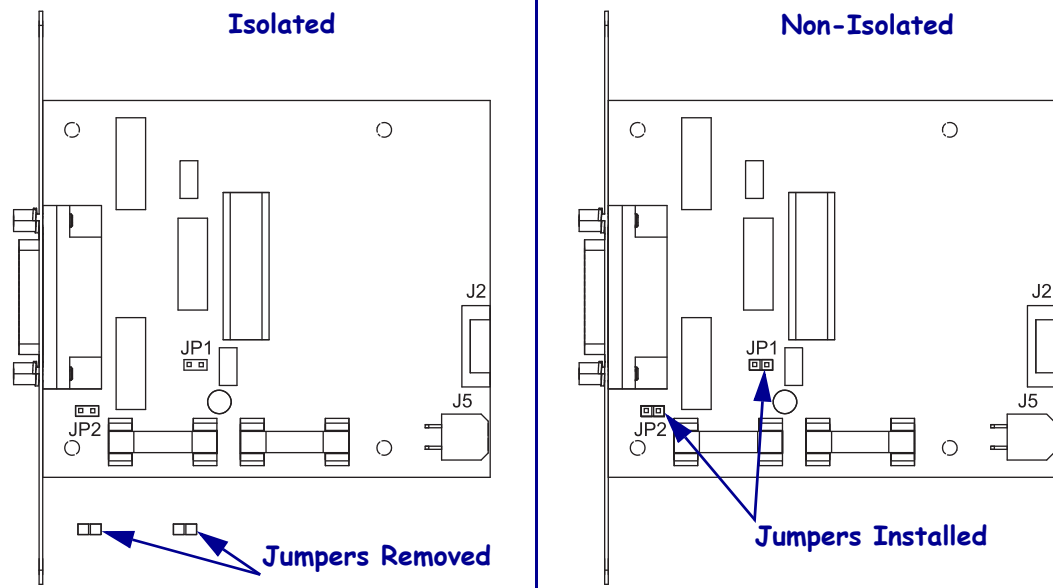
Pin No.	Signal Name	Signal Type	Description
3	START PRINT	Input	<ul style="list-style-type: none"> • Pulse Mode—The label printing process begins on the HIGH to LOW transition of this signal if a format is ready. De-assert this signal HIGH to inhibit printing of a new label. • Level Mode—Assert LOW to enable the printer to print if a label format is ready. When de-asserted 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. De-assert 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	<ul style="list-style-type: none"> • 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	+28 V (Fused at 2 A) Replace the fuse only with one of the same type and rating.	Power	<p>The Interface Power Supply. Supplies power to external sensors as required.</p> <p> Note • If operating with 28V signals only, pin 7 may be used to supply power to pin 2, which creates a non-isolated mode of operation. (This is applicable for all printers except the 110XiIIIPlus.)</p>
8	POWER GROUND (+28 V DC Return)	Ground	<p>The Interface Power Ground.</p> <p> Note • If pin 7 is used to supply power to pin 2, use this pin to ground pin 1. (This is applicable for all printers except the 110XiIIIPlus.)</p>
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	<p>Asserted LOW in the following circumstances:</p> <ul style="list-style-type: none"> • 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

Table 4 • 5V Applicator Interface Connector Pin Configuration (Continued)

Pin No.	Signal Name	Signal Type	Description
11	END PRINT	Output	<ul style="list-style-type: none"> • MODE 0—The applicator port is OFF. • MODE 1—Asserted LOW only while the printer is moving the label forward; otherwise de-asserted HIGH. • MODE 2—Asserted HIGH only while the printer is moving the label forward; otherwise de-asserted 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 while there is no media in the printer.
13	RIBBON OUT	Output	Asserted LOW while there is no ribbon in the printer.
14	DATA READY	Output	<ul style="list-style-type: none"> • Asserted LOW when sufficient data has been received to begin printing the next label. • Deasserted HIGH whenever printing stops after the current label, due to either a pause condition or the absence of a label format.
15 (Non-RFID)	SPARE	Output	To be determined.
15 (RFID)	VOID	Output	<ul style="list-style-type: none"> • Asserted LOW when the RFID transponder over the antenna is “voided.” • De-asserted HIGH when the end print signal is asserted.

Figure 10 • Isolated and Non-isolated Applicator Operation



24-28V Applicator Board

Which model of *XiIIIPlus* printer are you working on?

If you have a...	Then...
110 <i>XiIIIPlus</i>	Always use Isolated Mode of operation. There is no usable voltage on Pin 7 with respect to Pin 8.
140 <i>XiIIIPlus</i> 170 <i>XiIIIPlus</i> 220 <i>XiIIIPlus</i>	Can use either Isolated or Non-Isolated Modes.

See [Figure 11](#) and [Table 5](#) to identify the pins, signals, and functions for the 24-28V applicator board port.

Figure 11 • 24-28V Applicator Board Pinouts

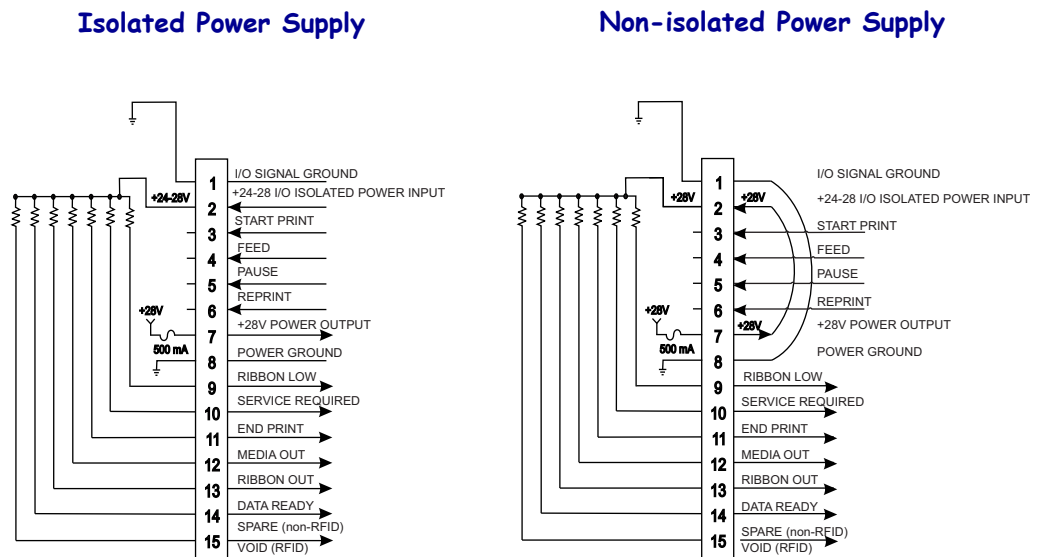


Table 5 • 24-28V Applicator Interface Connector Pin Configuration

Pin No.	Signal Name	Signal Type	Description
1	I/O SIGNAL GROUND (+24-28V Return)	I/O Signal Ground	No jumpers to configure. Important • Customer must provide this external ground. (This ground can come from pin 8 when operating at 28V for all printers except the 110 <i>XiIIIPlus</i> .)
2	+24-28V I/O (Fused at 2 A) Replace the fuse only with one of the same type and rating.	Power	No jumpers to configure. This +24-28V power source also supplies voltage for output signal pull-up resistors. Important • Customer must provide this external power (This power can come from pin 7 when operating at 28V for all printers except the 110 <i>XiIIIPlus</i> .)

Table 5 • 24-28V Applicator Interface Connector Pin Configuration (Continued)




Pin No.	Signal Name	Signal Type	Description
3	START PRINT	Input	<ul style="list-style-type: none"> • Pulse Mode—The label printing process begins on the HIGH to LOW transition of this signal if a format is ready. De-assert 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 de-asserted 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. De-assert 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	<ul style="list-style-type: none"> • 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	+28 V (Fused at 500mA)  Caution • Replace the fuse only with one of the same type and rating.	Power	<p>The Interface Power Supply. Supplies power to external sensors as required.</p> <p> Note • If operating with 28V signals only, pin 7 may be used to supply power to pin 2, which creates a non-isolated mode of operation. (This is applicable for all printers except the 110XiIIIPlus.)</p>
8	POWER GROUND (+28 V DC Return)	Ground	<p>The Interface Power Ground.</p> <p> Note • If pin 7 is used to supply power to pin 2, use this pin to ground pin 1. (This is applicable for all printers except the 110XiIIIPlus.)</p>
9	RIBBON LOW	Output	Asserts LOW if the Supplies Warning feature is enabled and the amount of remaining ribbon remaining on the supply spindle is below the threshold level.
10	SERVICE REQUIRED	Output	<p>Asserted LOW in the following circumstances:</p> <ul style="list-style-type: none"> • 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

Table 5 • 24-28V Applicator Interface Connector Pin Configuration (Continued)

Pin No.	Signal Name	Signal Type	Description
11	END PRINT	Output	<ul style="list-style-type: none"> • MODE 0—The applicator port is OFF. • MODE 1—Asserted LOW only while the printer is moving the label forward; otherwise de-asserted HIGH. • MODE 2—Asserted HIGH only while the printer is moving the label forward; otherwise de-asserted 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 while there is no media in the printer.
13	RIBBON OUT	Output	Asserted LOW while there is no ribbon in the printer.
14	DATA READY	Output	<ul style="list-style-type: none"> • Asserted LOW when sufficient data has been received to begin printing the next label. • Deasserted HIGH whenever printing stops after the current label, due to either a pause condition or the absence of a label format.
15 (Non-RFID)	SPARE	Output	To be determined.
15 (RFID)	VOID	Output	<ul style="list-style-type: none"> • Asserted LOW when the RFID transponder over the antenna is “voided.” • De-asserted HIGH when the end print signal is asserted.

Input/Output Specifications

Figure 12 • Typical Input Circuit

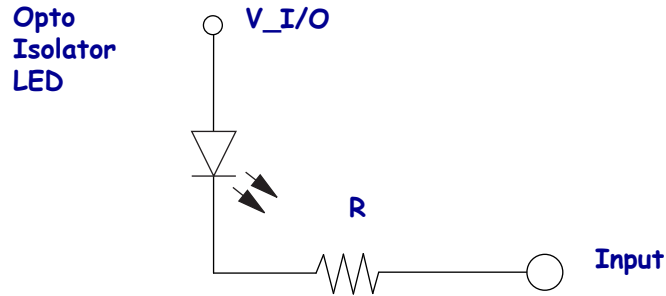


Table 6 • Input User Specifications

Applicator Board	Resistor at V_I/O	Maximum Current	Minimum Current
24-28V	4.7K Ohm	6mA at 28V	2mA
5V	220 Ohm	18mA at 5V	2mA

Figure 13 • Typical Output Circuit

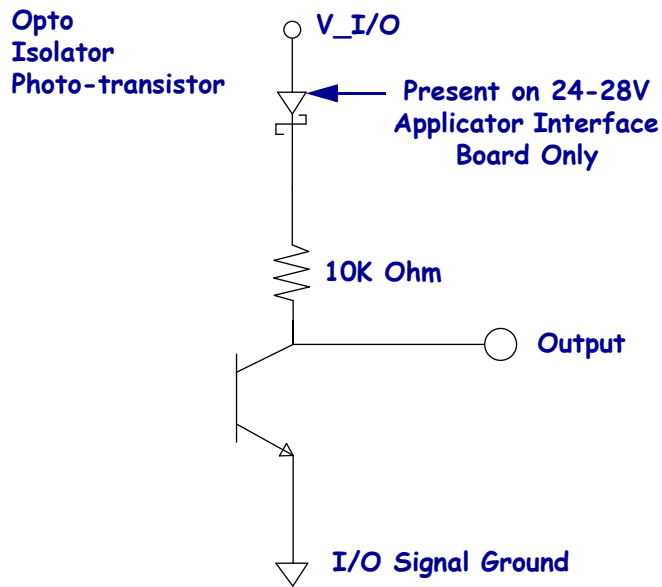


Table 7 • Output User Specifications

Output Current	
I_{oh}	<ul style="list-style-type: none"> a. Limited by 10K ohm pull-up resistor. b. Not actively driven high.
I_{ol}	<ul style="list-style-type: none"> a. 7mA maximum. b. Not intended to sink high current loads.