I-Class™ *Mark II*

GPIO Option ■ ■ ■

right by our customers. ■ ■ ■

datamax·o'neil

Overview

This document describes the installation and use of the General Purpose Input Output (GPIO) option for the I-Class Mark II printer. Follow the steps to begin installing/using the option.
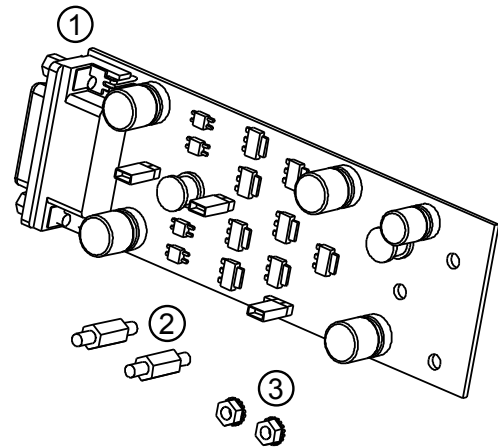
> ⚠️ **CAUTION** *For safety and to avoid equipment damage, turn OFF the power switch and unplug the AC power cord from the printer before starting this installation.*

Contents

This kit contains the following items:

① GPIO Circuit Card Assembly

② Standoff, 6mm Hex (2)

③ Locking Nut, 5.5mm (2)

Tools Required

To install this option, you will need:

- Philips screwdriver
- 5mm Hex Driver
- 5.5mm Hex Driver
- 6mm Hex Driver

Additional Requirements

Depending on your application, you may need the following hardware to interface the card:

- Cable - DB15 Male connector (e.g., StarTech C15PCM) with shielded cabling.

Installing the Option

If the GPIO Card is already installed in the printer, skip this section and proceed to "Configuring the Hardware". Otherwise, install the GPIO Card as described below:

A) Turn off and disconnect the power cord from the printer. Remove the three Screws from the left side cover of the printer.

B) Open the printer's cover, loosen *(do not remove)* the two Screws on the inside of the printer and lift the Cover Assembly up and off the printer.

Cover Assembly
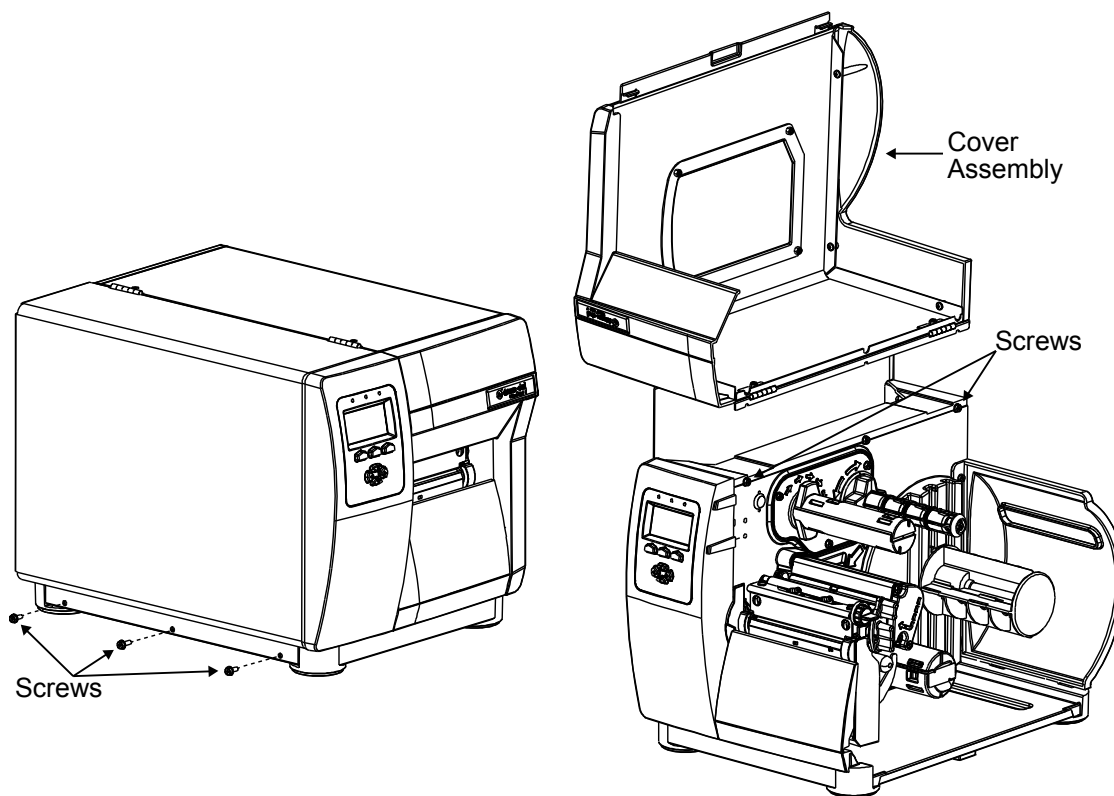
Screws

Screws

C) Remove the 5mm Screw and Cover Plate from the rear of the printer.

Cover Plate

5mm Screw
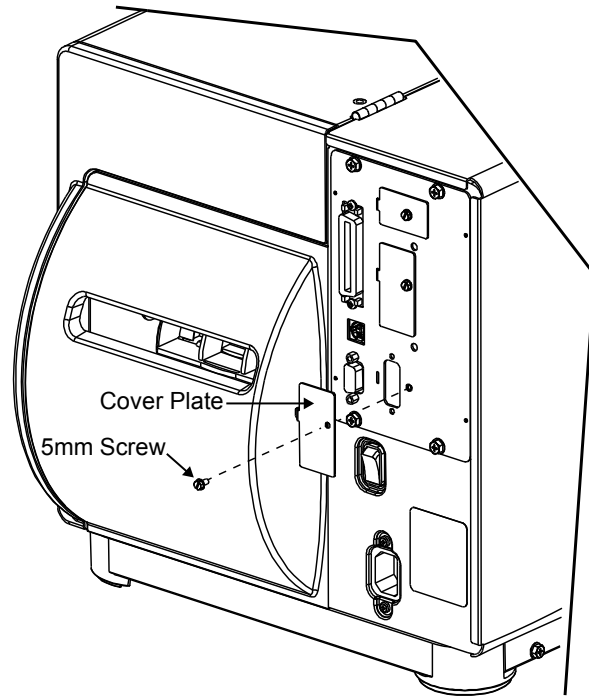
D) Remove the two Jack Screws from the GPIO Card, *(these will be re-installed later in the procedure).*

Jack Screws
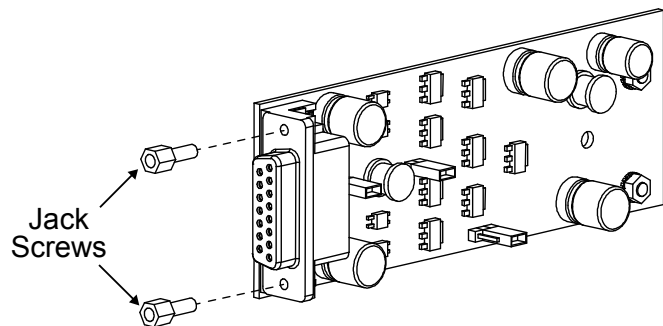
E) Install the two 6mm Standoffs into the main board in the locations shown.
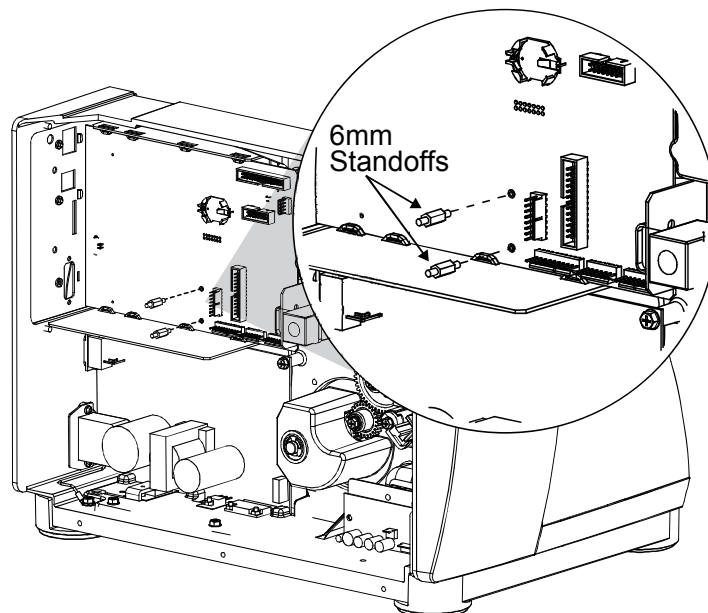
6mm Standoffs

F) Install the GPIO Card into the printer. First insert the "Port" end into the cut-out in the rear of the printer. Then pivot the GPIO Card onto the two Standoffs.

G) Loosely install the two previously removed Jack Screws and the two 5.5mm Nuts.
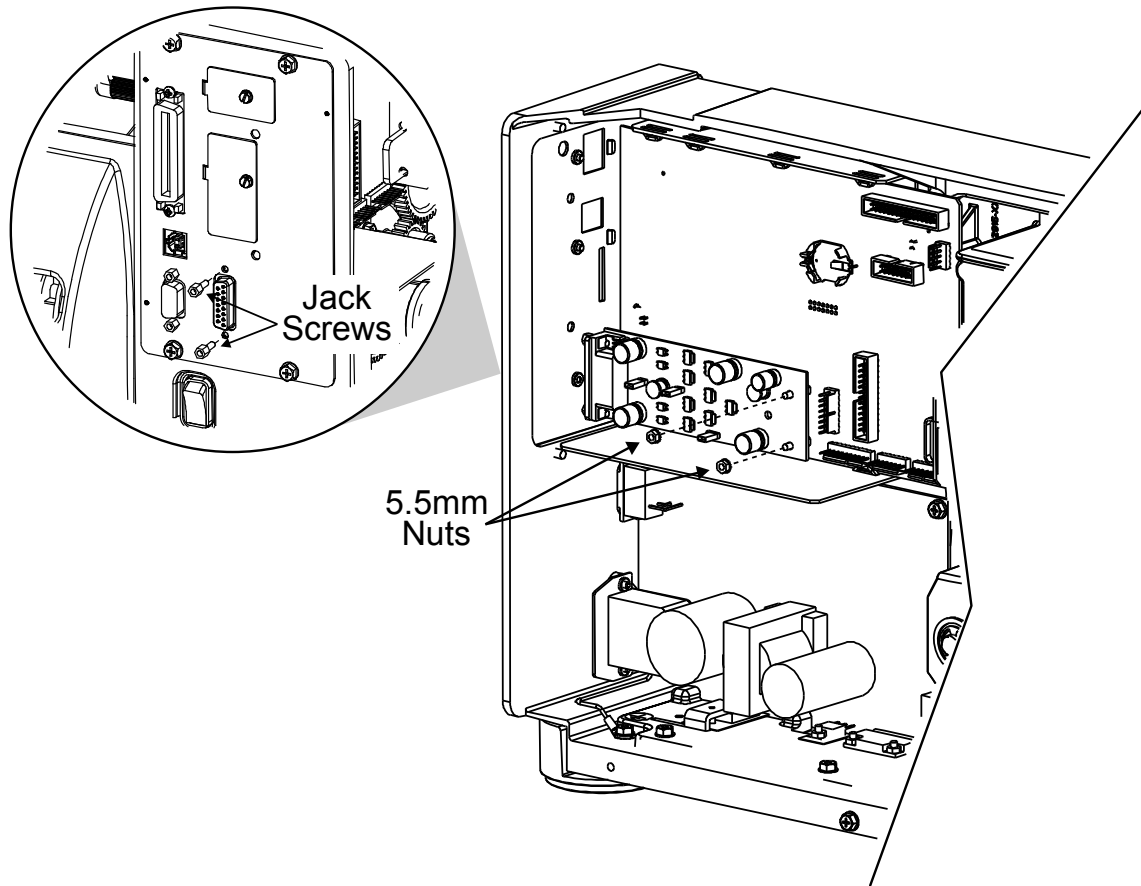
H) Tighten the two Jack Screws and the two 5.5mm Nuts. Proceed to "Configuring the Hardware" on the next page.
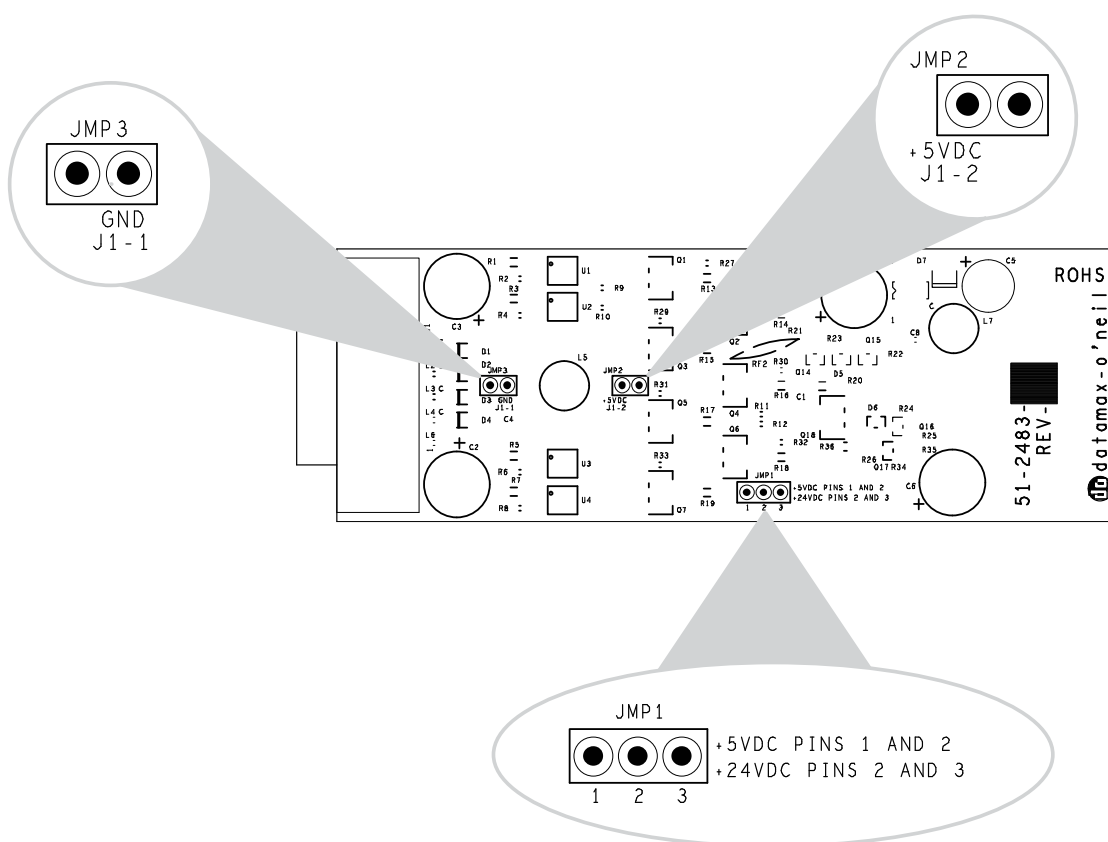
Configuring the Hardware

Configure the card to meet your interfacing requirements by arranging hardware jumpers, as described in the following procedure:

⚠ **CAUTION**	▪ Only qualified service personnel should configure of the GPIO card. ▪ For your safety and to avoid equipment damage, always turn OFF power and unplug the printer's power cord before beginning this installation and when performing service. ▪ Always wear a wrist strap and follow standard ESD prevention measures when handling the card.

A) Turn off and disconnect the power cord from the printer. Remove the printer's cover if needed.

B) Set the jumpers on the card (detailed below) to meet the requirements of your application. Once complete re-install the printer's cover.

Four dedicated inputs control printer functions. Designed to interface to open-collector outputs, these inputs require no external pull-ups, while blocking diodes allow the use of totem pole outputs from +4.5 VDC to + 26 VDC. Optical isolators provide galvanic isolation. Two print control interface circuit examples are given on the following page.

For direct inputs –

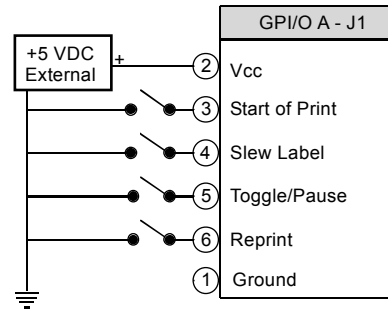Default Configuration JMP2 and JMP3 installed. Uses the printer's +5VDC and Ground to supply the devices interfacing to the GPIO inputs (as shown in the sample circuit, right).

| GPI/O A - J1	
③	Start of Print
④	Slew Label
⑤	Toggle/Pause
⑥	Reprint
①	Ground
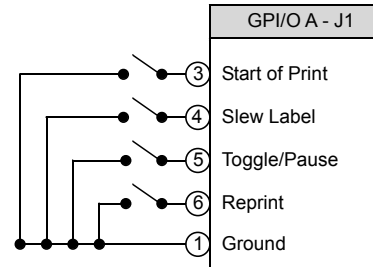
For isolated inputs –

To provide galvanic isolation for the GPIO inputs, remove Jumper JMP 2 then supply an external +5VDC source voltage to Pin 2. Remove Jumper JMP 3 and supply an external Ground (as shown this sample circuit, right).

+5 VDC External

GPI/O A - J1	
②	Vcc
③	Start of Print
④	Slew Label
⑤	Toggle/Pause
⑥	Reprint
①	Ground

Seven dedicated outputs are available for control, warning, and error functions. These open-collector outputs have slew-limited signal-edge rise and fall times to prevent cross talk in the cabling. Optional 10K ohm pull-up resistors, tied to a common point for use at either +5 or +24 VDC, are available via Jumper JMP 1. For +5VDC, on JMP1 place a jumper across pins 1 and 2. For +24VDC, on JMP1 place a jumper across pins 2 and 3.

☑ **Note:** *If external pull-ups are used (that is, without Jumper JMP1 installed), ensure that the applied external voltage does not exceed +30VDC.*

The table on the following page details the GPIO port pin assignments, settings and functions.
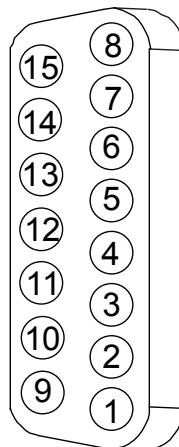
⚠️ **WARNING**	*Failure to properly configure the GPIO Port can result in damage to the printer and / or connected devices.*

GPI/O Port A Jumper Overview					
Pin	**Signal Name**	**Direction** [1]	**Jumper**	**Position**	**Function / Description**
1	Ground	N/A	JMP 3	Installed	Printer chassis is used.
				Removed	Ground must be supplied.
2	+5 VDC		JMP 2	Installed	Printer +5VDC is used (.5 amp maximum)
					☑ **Note:** *Drawing more than .5 amps can cause unreliable printer operation.*
				Removed	+5VDC must be supplied.
3	Start Of Print [2]	Input	N/A	N/A	Programmable [3]
4	Slew Label				Media is advanced until the signal goes HIGH and, if not in continuous mode, the label is positioned at the next available TOF.
5	Toggle / Pause				The printer pauses when the signal is taken LOW.
6	Reprint				The last label is reprinted exactly, with no increment or time stamp changes; recommended for use during error conditions. Keeping this signal LOW produces non-stop printing.
7	+24 VDC	N/A			Printer +24 VDC (1.5 amp maximum).
8	Ground				Printer chassis.
9	Ribbon Low	Output	JMP 1	When inactive, outputs will be pulled up to a voltage determined by this jumper setting, where: ▪ Pins 1 – 2 = +5VDC; ▪ Pins 2 – 3 = +24VDC; or, ▪ None = an external voltage (not to exceed +30VDC) via external pull-ups providing a 20K ohm feedback path through any two outputs.	Programmable [1]. Signifies a RIBBON LOW DIAMETER warning condition.
10	Service Required				Evoked by occurrences listed under 'Fault Messages.'[1] Active LOW.
11	End Of Print				Programmable [1]. Signifies the End of Print (EOP) process.
12	Media Out				Evoked during an Out of Stock condition. Active LOW.
13	Ribbon Out				Evoked during an Out of Ribbon condition. Active LOW.
14	Data Ready				Evoked when a label is waiting to print. After Start of Print is received, printing will begin. For synchronization with the print cycle, End Of Print indicates the completion of the process. Active LOW.
15	Option Fault				Evoked during a Linear Scanner or RFID fault condition. Active LOW.

[1] Signal directions given relative to the printer.

[2] If active with no current print job, "WAITING FOR DATA" will be displayed. Specifying a quantity of 9999 while keeping this signal ON will cause non-stop label printing, except in single label "Imaging Mode", which will cause the printer to stop between labels. See the *Operator's Manual* for details.

[3] For details see *PRINTER OPTIONS / GPIO PORT* in the *Operator's Manual.*

The GPIO card has the following menu configurable features and can be tailored to your application.

GPIO PORT		Controls the optional Applicator Interface Card's GPIO function, where:
	GPIO DEVICE	Sets the option to work with a specific device type, where:
	DISABLED	Disables the option.
	APPLICATOR	Enables parameters for related label applicator functions: • Completion upon last SOP, de-asserts Data Ready (DRDY); • FEED allowed at any time; and, • DRDY upon PAUSE.
	APPLICATOR2	Enables parameters for alternate label applicator functions: • Completion upon 1 msec. overlap of Data Ready (DRDY) and End of Print (EOP); • DRDY signal end inhibits FEED; and, • De-asserts DRDY upon PAUSE or FAULT.
	BARCODE VERIFIER	Enables the GPIO Port to work with a bar code verifier.
	START OF PRINT	Selects the type of input signal required to initiate Start of Print (SOP), where:
	LOW PULSE	Triggers printing with a low pulse.
	HIGH PULSE	Triggers printing with a high pulse.
	ACTIVE LOW	Triggers printing with a low signal.
	ACTIVE HIGH	Triggers printing with a high signal.
	EDGE	Triggers printing with a signal edge transition.
	END OF PRINT	Sets the type of output signal generated to indicate End of Print (EOP), where:
	LOW PULSE	Outputs a low pulse upon completion.
	HIGH PULSE	Outputs a high pulse upon completion.
	ACTIVE LOW	Outputs a logic low upon completion.
	ACTIVE HIGH	Outputs a logic high upon completion.
	RIBBON LOW	Sets the type of output signal generated to indicate Ribbon Low condition where:
	ACTIVE LOW	Outputs a logic low upon condition.
	ACTIVE HIGH	Outputs a logic high upon condition..
	SLEW ENABLE	Selects the type of input signal required to initiate label slew, where:
	STANDARD	Triggers slew with a low signal.
	LOW PULSE	Triggers slew with a low pulse.
	HIGH PULSE	Triggers slew with a high pulse.
	ACTIVE LOW	Triggers slew with a low signal.
	ACTIVE HIGH	Triggers slew with a high signal.
	Err On Pause (App2)	Sets the output when a service required fault occurs (Applicator Interface Card Type 2 equipped only), where:
	ENABLED	Enables the output signal.
	DISABLED	Disables the output signal.

- **Input Monitor** – Display incoming GPIO binary signal states using the **DIAGNOSTICS → OPTIONS TESTING → TEST GPIO → MONITOR GPIO INPUT** selection.

SOP	FEED	PAUSE	REPRT
1	1	1	1

☑ *Note: Unused, non-connected inputs will have an indeterminate state, and may assume a value of 1 or 0.*

- **Output Monitor** – Display outgoing GPIO binary signal states using the **DIAGNOSTICS → OPTIONS TESTING → TEST GPIO → TEST GPIO OUTPUT** selection.

EP	RL	SR	MO	RO	DR	OF
1	1	1	1	0	1	0

☑ *Note: Unused, non-connected outputs will have an indeterminate state, and may assume a value of 1 or 0.*

- **GPIO Report** – Print the configuration and current signal state information using the **DIAGNOSTICS → OPTIONS TESTING → TEST GPIO → PRINT SIGNAL INFO** selection:

GPIO SIGNAL INFO
WED 11:04AM 4JUL2011
CARD ID#3

OUTPUT SIGNALS	**INPUT SIGNALS**
END OF PRINT PIN# 11 GPIO A LOW PULSE CURRENT LEVEL 1	START OF PRINT PIN# 3 GPIO A ACTIVE HIGH CURRENT LEVEL 1
RIBBON LOW PIN# 9 GPIO A ACTIVE LOW CURRENT LEVEL 0	FEED PIN# 4 GPIO A ACTIVE LOW CURRENT LEVEL 1
SERVICE REQUIRED PIN# 10 GPIO A ACTIVE LOW CURRENT LEVEL 1	TOGGLE PAUSE PIN# 5 GPIO A ACTIVE LOW CURRENT LEVEL 1
MEDIA OUT PIN# 12 GPIO A ACTIVE LOW CURRENT LEVEL 1	REPRINT PIN# 6 GPIO A ACTIVE LOW CURRENT LEVEL 1
RIBBON OUT PIN# 13 GPIO A ACTIVE LOW CURRENT LEVEL 1	
DATA READY PIN# 14 GPIO A ACTIVE LOW CURRENT LEVEL 1	
OPTION FAULT PIN# 15 GPIO A ACTIVE LOW CURRENT LEVEL 1	