Speedway ® Revolution
GPIO Box Datasheet

Superior Performance Made Easy

Technology leader Impinj envisioned the RFID system of tomorrow a mind of its own. The Speedway Revolution reader automatically delivers peak performance—all day, every day.

Overview

Impinj designed the Speedway ® Revolution GPIO Box for use with the Speedway ® Revolution reader to provide convenient access to the reader's GPIO (G eneral Purpose Input/Output) port. The GPIO Box interfaces with the reader via a supplied HD15 cable, and separates each input and output signal to easy-access screw terminals. Neighboring ground and power terminals accompany each signal terminal to easily connect three-wire devices. The GPIO Bo x also includes an on-board relay to interface with devices require high wattage or an open/short signal.

Features

- Easy-access screw terminals
- Power and ground terminals for each input and output
- Each output can provide 250mA at 24V with optional external universal power supply
- SPDT Relay output capable of 5A at 240VAC
- Ability to use reader-supplied 5V for low power digital applications, including the SPDT Relay
- Highly visible LED indicators for each input and output eases troubleshooting and diagnostics
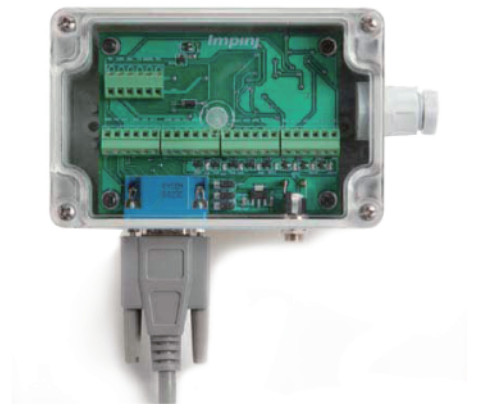- Access to reader's RS-232 serial interface

Figure 1 – Speedway® Revolution GPIO Box with HD15 Cable

Mechanical Specifications

Parameter	Typical	Conditions/Notes
Dimensions	120 x 80 x 55	Enclosure size
Material	Polycarbonate	Enclosure material
Dimensions	6–8 mm	Cable gland inner diameter

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Electrical Specifications

Parameter	Min	Typical	Max	Units	Conditions/Notes
Vcc	5	24	30	V	
Io			250	mA	Current each signal can source
Ii			250	mA	Current each signal can sink
Ri		15		kΩ	Input resistance for GPIs
Relay Nominal Switch Capacity		10A, 250 V AC 10A, 125 V AC 6A, 277 V AC			
Relay Max Switching Voltage		250 V AC 100 V DC			
Relay Max Switch Current		10 A(AC), 5 A(DC)			
Relay Expected Life, Electrical		10^5			At 10 A, 125 V AC
Relay Expected Life, Mechanical		10^7			At 180 cpm
Screw Tightening Torque	0.22	0.25	Nm		
Conductor AWG	26	16			

Warning: Only use the supplied HD15 cable. Use of a standard VGA cable may damage the reader.

Environmental Specifications

Parameter	Typical	Units	Conditions/Notes
IP Rating	IP54	°C	
Temperature	-25–55		Relative, non-condensing
Humidity	5–95	%	Performance will be severely degraded if product is subjected to any standing water
RoHS	N/A		Designed to meet RoHS, not certified RoHS

Impinj, Inc. is the leading provider of UHF RFID solutions for identifying, locating and authenticating items. Impinj's GrandPrix™ technology platform is the most comprehensive and widely adopted in our industry.

Connecting an Allen-Bradley Sensor

An Allen-Bradley 42CM PNP laser sensor can be quickly and easily connected to the Speedway Revolution GPIO Box using the A-B 889D connecting cable:

1. Unplug the power and reader connection cables from the GPIO Box.
2. Remove the clear, plastic cover using a screwdriver.
3. Loosen the cable gland and insert the bare wire ends of the cable into the GPIO Box.
4. Connect the brown wire to a Vcc to the right of the input you wish you to use and tighten down the screw.
5. Connect the Blue wire to GND to the left of the input.
6. Connect either the black or the white wires to the input terminal you wish to use.(The black wire associates to the Light Operate mode of the sensor and the white associates to Dark Operate.)
7. Tighten the cable gland to cinch down on the cable.
8. Replace the clear lid and plug the reader and power cables back into the GPIO Box.

Use the Multi-Reader application to verify that the sensor is working correctly, and triggering on the designated markings.

Power Low Wattage Light Signals

In many applications it is helpful to utilize a light stack to indicate the status of an RFID system. By using the four GPO Outputs of the Speedway Revolution, an application can turn on or turn off different lights depending upon which antenna is operating, if the reader is currently writing tags, or if it has encountered an error while writing.

You may connect LED or low wattage (less than 6 W) lights directly to each OUT signal and either the neighboring GND or Vcc depending upon whether you want the light to turn on when the GPO is high or low. Or, connect two lights to the same signal by connecting one to Vcc and the other to GND . In this case, when the GPO signal is high, one light turns on and when the GPO goes low, the other light will turn on.

Power High Wattage Devices and Using the Relay

By using the on-board relay, you can interface to, and control high wattage devices.

To use the relay, simply move the top jumper, labeled JGPO , on the GPIO Box board to the left two pins, labeled RLY and RO1 . This action connects the GPO1 signal from the Speedway Revolution to the control circuitry for the relay. You can then connect the device with which you wish to interface to the three terminals on the top left of the board. One connection will always be connected to the COM , or common, connection. The other two connections will be either a short to COM or an open, depending on the value of GPO1 . If GPO1 is low, then NC (normal closed) is shorted; when GPO1 is high, NO (normal open) is shorted.

To power a high wattage light, connect COM to ground and NO to one terminal of a light. The other terminal of the light should be connected to an appropriate power source.
When GPO1 is low, NO will be an open circuit and will not allow the light to turn on. When GPO1 is high, it will short NO to ground and turn on the light. The relay can be switched even while using the 5V supplied by Speedway Revolution.

Note: when using the relay, OUT1 signal will no longer operate and will always output as a high signal.

Using Speedway Revolution's 5V Supply

A feature of the Speedway Revolution is the 5V supplied through the GPIO port. By using this power supply, you may provide a power source to low-power logic devices without requiring a separate power supply. To utilize the 5V supply from the reader, move the bottom two jumpers to the left two pins. In this configuration, the row labeled Jplus should have the jumper connecting the pins labeled 5V and Vcc. The row labeled Jminus should have the jumper connecting the pins labeled RGND and GND.

Note: when using the reader's supplied power source, the opto-isolation built within Speedway Revolution is bypassed, which may cause signal degradation.

Ordering Information

Part number
IPJ-A5000-000

Notices:

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This accessory may only be used with an Impinj reader or "Powered by Impinj" reader. Using this accessory with any other device voids the accessory's warranty and may cause damage to the accessory or device.

Impinj assumes no responsibility for determining if the accessory and operation of the accessory with a reader product complies with laws, guidelines and regulations of the region in which the accessory is located and operated.

These products are not designed for use in life support appliances, devices, or systems where malfunction can reasonably be expected to result in personal injury.

About DilinxRFID

As a technology partner with Impinj, DilinxRFID is a unique technology innovator and advanced manufacturer in the global RFID market incorporating the world-leading Battery-Assisted Passive ("BAP") and Printed Battery technologies into its own manufacturing capabilities. We provide highly reliable readers and BAP tags for target applications like Aerospace, Pharma, Parking Control System, Personnel Tracking, Cold Chain for food and medicines, and general logistics in challenging environments.

For more information, visit www.DilinxRFID.com.

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