

Digital I/O Carrier Board for Raspberry Pi

Features

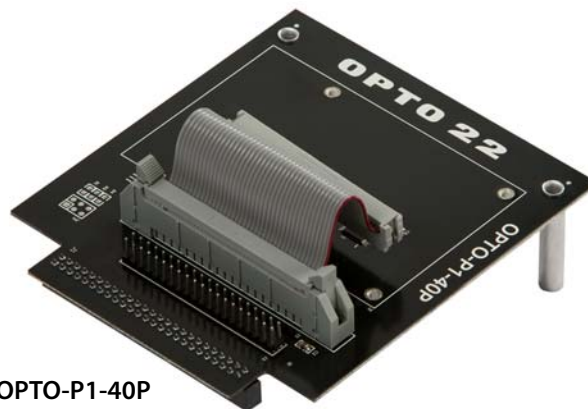
- Provides a GPIO interface between a Raspberry Pi and digital I/O modules on select Opto 22 mounting racks
- Perfect for prototyping, proofs of concept, and environments in which an industrially hardened controller isn't required
- Auxiliary 40-pin connector supports HAT add-on boards using UART, SPI, or I²C
- Interface cable and Pi board mounting standoffs included
- Code samples available at developer.opto22.com

Description

Imagine safely and reliably sensing and switching 5-60 VDC, 120 VAC, and 240 VAC loads with a Raspberry Pi. Well, now you can!

With Opto 22's Digital I/O Carrier Board for Raspberry Pi®, you can harness the power and performance of world-class, industrially hardened digital input/output (I/O) modules with your Raspberry Pi. Use your Pi to switch industrial-level electrical loads far beyond the Pi's built-in 3.3 VDC GPIO pins, and monitor and control electrical loads required for real-world devices like industrial motors, pumps, and sensors.

Just insert the Carrier Board's interface cable into your Pi's 40-pin GPIO connector, and snap the board onto a compatible Opto 22 rack. Use the rack's power supply to power the Pi, and then use your favorite Pi-supported programming language to read and write to up to 16 digital I/O points. (Mounting rack, power supply, and I/O modules are sold separately.)



OPTO-P1-40P

In addition, with the Carrier Board's auxiliary 40-pin GPIO connector, other Pi-compatible peripherals can access the Pi's unused pins.

I/O Mounting Racks

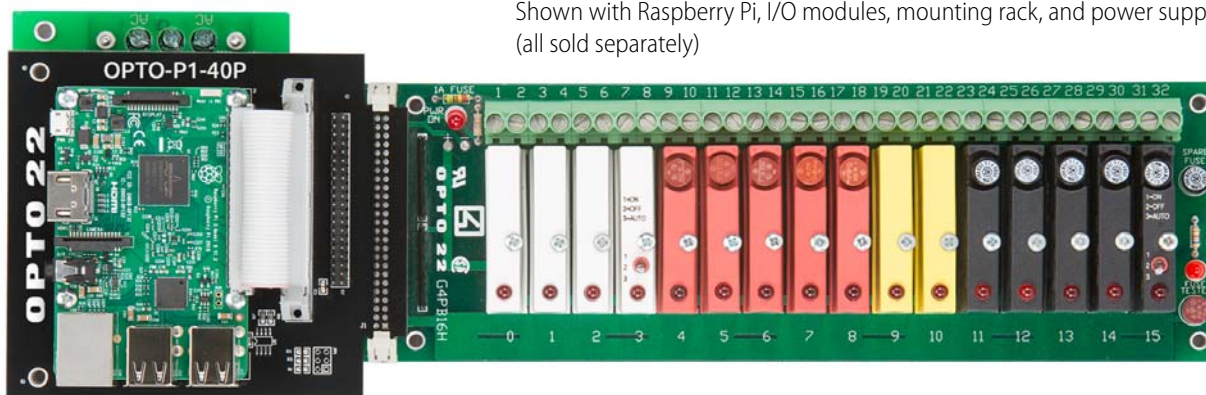
The Carrier Board supports the following mounting racks designed for G4 I/O modules. These racks can accommodate up to 10 AWG wire. The logic supply is fused with a 1 A fuse.

Mounting Racks	
G4PB16H	holds 16 I/O modules
G4PB8H	holds 8 I/O modules

For customers with SNAP, Quad Pak, or G1 I/O modules, the Carrier Board also supports the SNAP-D4M, PB16HQ, PB4H, and PB16H racks.

Digital I/O Carrier Board for Raspberry Pi

Shown with Raspberry Pi, I/O modules, mounting rack, and power supply (all sold separately)



Part Number

Part	Description
OPTO-P1-40P	Digital I/O Carrier Board for Raspberry Pi

Digital I/O Carrier Board for Raspberry Pi

Compatible I/O

Opto 22 I/O modules and mounting racks have been field-proven for nearly 40 years and are available worldwide. Most I/O modules carry Opto 22's lifetime warranty.

With the Digital I/O Carrier Board for Raspberry Pi, you can read and write to any of these G4 digital I/O modules (sold separately):

Model	Input	Output	Field Voltage	Special Features
G4IAC5	●		90–140 VAC/DC	
G4IAC5A	●		180–280 VAC/DC	
G4IAC5L	●		90–140 VAC/DC	Low input resistance
G4IAC5MA	●		90–140 VAC/DC	Diagnostic switch
G4IDC5	●		10–32 VDC 12–32 VAC	
G4IDC5B	●		4–16 VDC	Higher speed
G4IDC5D	●		2.5–28 VDC	High speed
G4IDC5G	●		35–60 VDC/AC	
G4IDC5K	●		2.5–16 VDC	Highest speed
G4IDC5MA	●		10–32 VDC 12–32 VAC	Diagnostic switch
G4SWIN	●		NA	Simulates input
G4OAC5		●	12 VAC–140 VAC @ 3 A	
G4OAC5FM		●	12 VAC–140 VAC @ 3 A	
G4OAC5A		●	24 VAC–280 VAC @ 3 A	
G4OAC5AFM		●	24 VAC–280 VAC @ 3 A	
G4OAC5A5		●	24 VAC–280 VAC @ 3 A	Normally closed
G4OAC5A5FM		●	24 VAC–280 VAC @ 3 A	Normally closed
G4OAC5MA		●	12 VAC–140 VAC @ 3 A	Diagnostic switch
G4OAC5AMA		●	24 VAC–280 VAC @ 3 A	Diagnostic switch
G4ODC5		●	5–60 VDC @ 3 A	
G4ODC5FM		●	5–60 VDC @ 3 A	
G4ODC5A		●	5–200 VDC @ 3 A	
G4ODC5AFM		●	5–200 VDC @ 3 A	
G4ODC5MA		●	5–60 VDC	Diagnostic switch

Model	Input	Output	Field Voltage	Special Features
G4ODC5R		●	NA	Dry contact, normally open (reed relay)
G4ODC5RFM		●	NA	Dry contact, normally open (reed relay)
G4ODC5R5		●	NA	Dry contact, normally closed (reed relay)
G4ODC5R5FM		●	NA	Dry contact, normally closed (reed relay)
G4SWOUT		●	NA	Simulates output

NOTE: 15 and 24 VDC logic modules are not supported.

Each compatible I/O module provides single-channel flexibility and has a built-in LED status indicator to display the point's on/off status. Output modules can switch up to a 3 amp load and have a built-in fuse. Opto 22 input modules are designed to limit input current—you don't need current-limiting resistors.

Power Supplies

Although it's possible to power the rack and I/O modules from the Pi, Opto 22 recommends powering the Pi from the rack's power supply to ensure sufficient, consistent, and reliable power to all devices connected to the Pi.

Power Supplies	
PBSA	120 VAC input
PBSB	220 VAC input
PBSC	12/24 VDC input

Carrier Board Specifications

Interface connectors	<ul style="list-style-type: none"> Raspberry Pi I/O rack
Operating temperature	-20 to 70 °C
Storage Temperature	-40 to 85 °C
Relative Humidity	95%, non-condensing
Agency Approvals	CE, RoHS, DFARS
Warranty	30 months from date of manufacture

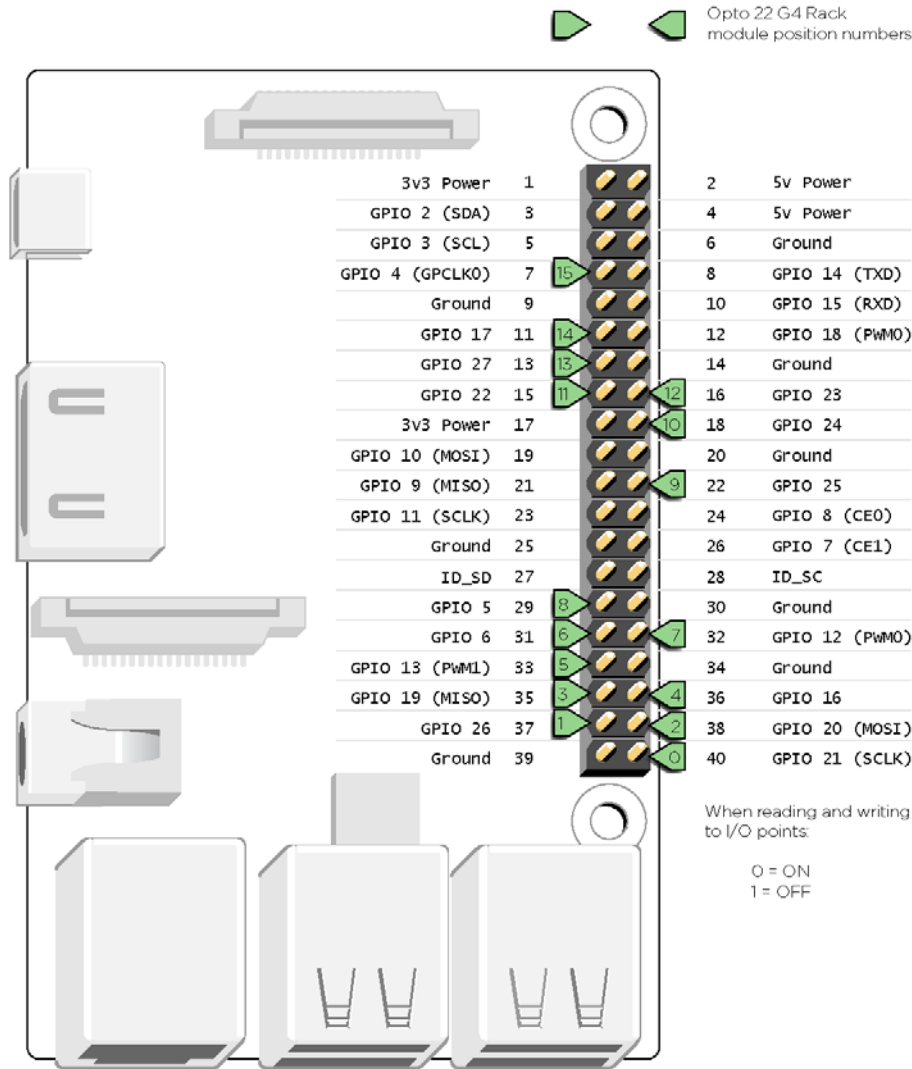
Digital I/O Carrier Board for Raspberry Pi

Read and Write with Pi

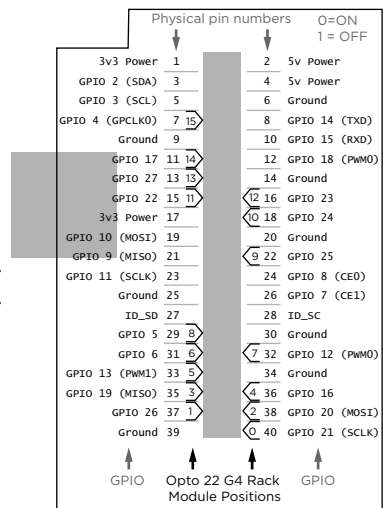
It's easy to read and write to Opto 22 I/O points using your favorite Pi-supported language.

This Pin-to-Point mapping diagram shows the 16 GPIO pins that are mapped to I/O points (according to their rack positions).

NOTE: Opto 22 I/O modules use negative true logic (a zero bit means On and a 1 bit means Off). When reading and writing to I/O points, remember that 0 is On and 1 is Off.

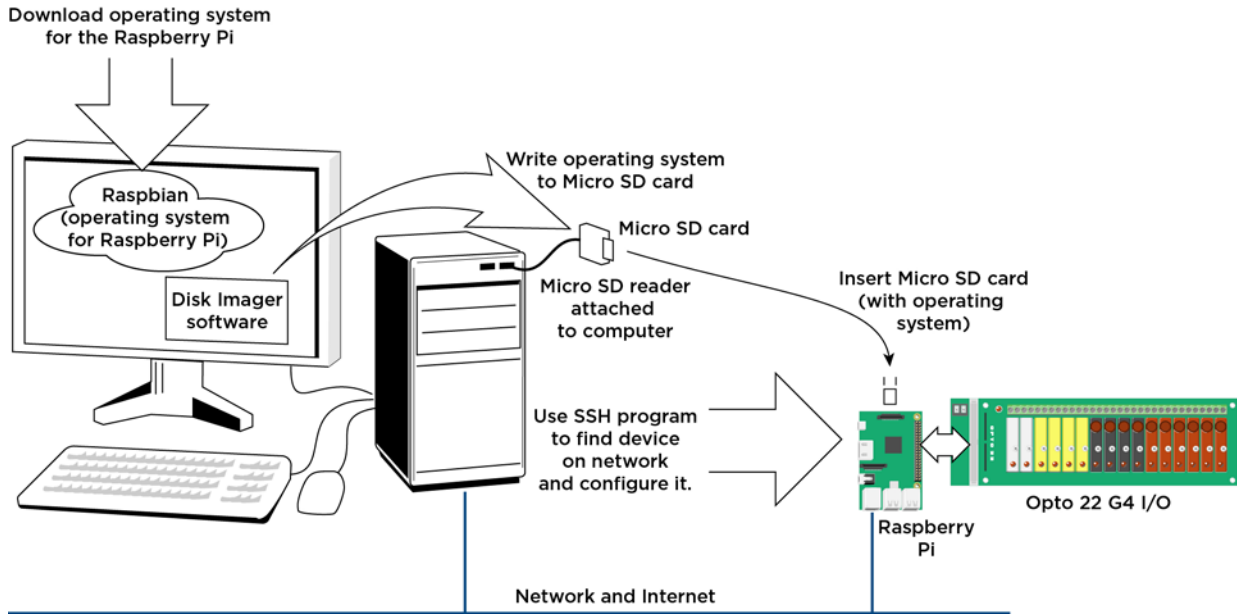


Place this overlay over your Pi's GPIO pins for a handy mapping reference.
You can download the template from developer.opto22.com.



Digital I/O Carrier Board for Raspberry Pi

Physical Setup



Dimensional Drawing

OPTO-P1-40P

