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Find the *Opto-22 G4PB24* at our website: *Click HERE*

G4 DIGITAL DC INPUT MODULES

Features

- 4000 volts transient optical isolation
- Built-in LED status indicator
- Small footprint design, reducing mounting space by approximately 50 percent
- Built-in filtering for transient suppression and noise rejection
- Operating temperature: -30 °C to 70 °C
- UL recognized, CSA certified, CE approved
- Passes NEMA Showering Arc Test (ICS 2-230)
- Meets IEEE Surge Withstand Specification (IEEE-472)



Opto 22 G4 digital input modules include the G4IDC5B high-speed module and the G4IDC5MA module with manual-on/manual-off/automatic switch for diagnostic testing.

DESCRIPTION

Opto 22's G4 DC input modules are used to detect on/off DC voltage levels. Each module provides up to 4000 volts (transient) of optical isolation between field inputs and the logic output of the circuit.

All DC input modules except the G4IDC5K and G4IDC5D are designed with filtering on the input and a hysteresis amplifier, providing high noise rejection and transient-free, "clean" switching. The G4IDC5K is a fast-switching module used to detect signals produced by photoelectric switches and TTL devices. The low-cost G4IDC5D is used for data acquisition.

The G4IDC5MA is a special module featuring a manual-on/manual-off/automatic switch, ideal for diagnostic testing of control applications.

The G4IDC5-SW and G4IDC5-SWNC modules supply power to an external dry contact switch and sense switch closure (SW) or opening (SWNC).

Typical applications for DC input modules include sensing the presence or absence of voltage and sensing contact closure from sources such as proximity switches, limit switches, selector switches, push buttons, photoelectric switches, and TTL-compatible devices.

Compatible with Raspberry Pi

The following G4 digital DC input modules can be used with the Digital I/O Carrier Board for Raspberry Pi® (part number OPTO-P1-40P) to monitor and control industrial devices with your Raspberry Pi:

- G4IDC5
- G4IDC5D
- G4IDC5G
- G4IDC5MA

Part Numbers

Part	Description
G4IDC5*	G4 DC Input 10–32 VDC, 5 VDC Logic
G4IDC5B	G4 DC Input 4–16 VDC, 5 VDC Logic High Speed
G4IDC5D*	G4 DC Input 2.5–28 VDC, 5 VDC Logic
G4IDC5G*	G4 DC Input 35–60 VDC, 5 VDC Logic
G4IDC5K	G4 DC Input 2.5–16 VDC, 5 VDC Logic Very High Speed
G4IDC5MA*	G4 DC Input 10–32 VDC, 5 VDC Logic With Manual/Auto Switch
G4IDC5-SW	G4 Switch Status Input, Self-powered, Normally Open
G4IDC5-SWNC	G4 Switch Status Input, Self-powered, Normally Closed
G4IDC15	G4 DC Input 10–32 VDC, 15 VDC Logic
G4IDC24	G4 DC Input 10–32 VDC, 24 VDC Logic

* Compatible with Raspberry Pi

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SPECIFICATIONS

	Units	G4IDC5*	G4IDC5B	G4IDC5D*	G4IDC5G*
Input voltage range	VDC VAC	10–32 12–32	4–16 4–16	2.5–28 —	35–60 35–60
Key feature		—	Higher speed	High speed	—
Input current at maximum line	mA	25	45	30	6
Isolation, input-to-output (transient): 1 ms 1 minute	 V V	 4000 1500	 4000 1500	 4000 1500	 4000 1500
Turn-on time	ms	5	0.05	1	10
Turn-off time	ms	5	0.1	1.5	10
Input allowed for off-state	mA, V	1, 3	0.7, 1	0.2, 1	0.7, 7
Nominal output supply voltage	VDC	5	5	5	5
Output supply voltage range	VDC	4.5–6	4.5–6	4.5–6	4.5–6
Output supply current at nominal logic voltage	mA	12	12	12	12
Input resistance (R1 in schematic)	ohms	1.5 K	300	900	10 K
Control resistance (Rc in schematic)	ohms	220	220	470	220
Output voltage drop	V @ 50 mA	0.4	0.4	0.4	0.4
Output current (sinking)	mA	50	50	50	50
Output leakage with no input	microamps @ 30 VDC	100	100	10	100
Transistor	V breakdown	30	30	30	30
Temperature: Operating Storage	 °C °C	 –30 to +70 –30 to +85	 –30 to +70 –30 to +85	 –30 to +70 –30 to +85	 –30 to +70 –30 to +85

* Compatible with Raspberry Pi

G4IDC5-SW and G4IDC5-SWNC modules

See page 4 for specifications and other information for the G4IDC5-SW and G4IDC5-SWNC self-powered modules.

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SPECIFICATIONS (CONT.)

	Units	G4IDC5K	G4IDC5MA*	G4IDC15**	G4IDC24**
Input voltage range	VDC VAC	2.5–16 —	10–32 12–32	10–32 12–32	10–32 12–32
Key feature		Highest speed	Diagnostic switch	—	—
Input current at maximum line	mA	30	25	25	25
Isolation, input-to-output (transient): 1 ms 1 minute	 V V	 4000 1500	 4000 1500	 4000 1500	 4000 1500
Turn-on time	ms	0.025***	5	5	5
Turn-off time	ms	0.025***	5	5	5
Input allowed for off-state	mA, V	0.2, 1	1, 3	1, 3	1,3
Nominal output supply voltage	VDC	5	5	15	24
Output supply voltage range	VDC	4.5–6	4.5–6	12–18	20–30
Output supply current at nominal logic voltage	mA	12	12	15	18
Input resistance (R1 in schematic)	ohms	500	1.5 K	1.5 K	1.5 K
Control resistance (Rc in schematic)	ohms	220	220	1 K	2.2 K
Output voltage drop	V @ 50 mA	0.4	0.4	0.4	0.4
Output current (sinking)	mA	50	50	50	50
Output leakage with no input	microamps @ 30 VDC	100	100	100	100
Transistor	V breakdown	30	30	30	30
Temperature: Operating Storage	 °C °C	 –30 to +70 –30 to +85	 –30 to +70 –30 to +85	 –30 to +70 –30 to +85	 –30 to +70 –30 to +85

* Compatible with Raspberry Pi
** Not for use with Opto 22 brains
*** At 5Vp-p square wave input, 50% duty cycle

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G4IDC5-SW AND G4IDC5-SWNC MODULES

Description

Each G4IDC5-SW and G4IDC5-SWNC module provides one isolated channel of contact status input. Each module supplies 13 volts of power to an external dry contact switch. The G4IDC5-SW senses switch closure; the G4IDC5-SWNC senses switch opening. Each user-supplied switch is connected with two wires. Because these modules include power for the switch, they are particularly cost-effective when labor costs for wiring external power are high.

Typical switches for use with these modules are switched status sensors (level sensors, pressure indicators, etc.), magnetic reed switches (used on doors or windows for burglar alarms), snap-action micro switches, the auxiliary switches on motor starters, and most relay contacts.

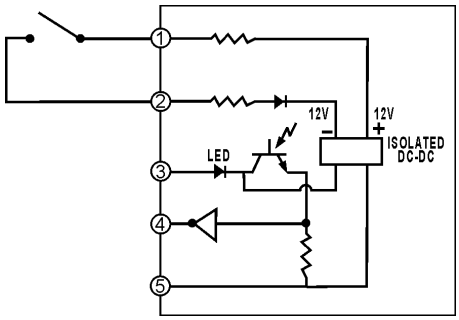
CAUTION: G4IDC5-SW and G4IDC5-SWNC inputs are not intended to be used with contacts that are connected to any external user-supplied voltage or currents.

Specifications

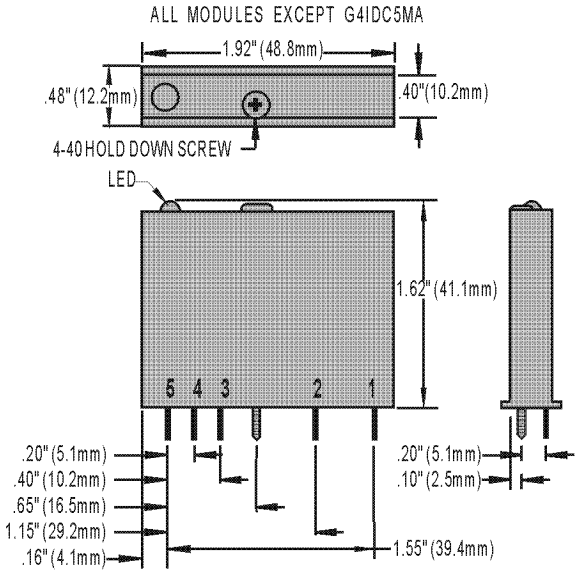
Field Side Ratings	
Open Circuit Voltage (Switch Open)	11 VDC min., 13 VDC typical, 15 VDC max.
Short Circuit Current (Switch Closed)	6 milliamps nominal
Minimum Off Resistance	≥20 K ohms
Maximum Allowable On Resistance (Wire + Contact Resistance)	500 ohms
Logic Side Ratings	
Logic Output Voltage for G4IDC5-SW (normally open)	<0.5 V max. (switch closed; LED on) @ 2 mA sinking 2.7 V min. (switch open; LED off) @ 0.4 mA sourcing
Logic Output Voltage for G4IDC5-SWNC (normally closed)	<0.5 V max. (switch open; LED on) @ 2 mA sinking 2.7 V min. (switch closed; LED off) @ 0.4 mA sourcing
Maximum Operating Common Mode Voltage (Field Term to Logic Connector)	250 V
Power Requirements:	5 VDC (±0.25) @ 25 mA nom.
Module Ratings	
Number of Channels Per Module	1
Turn-on Time	8 msec typical
Turn-off Time	8 msec typical
Input-to-output Isolation (transient)	4000 V AC/DC
Temperature	0 °C to 70 °C, operating –30 °C to 85 °C, storage

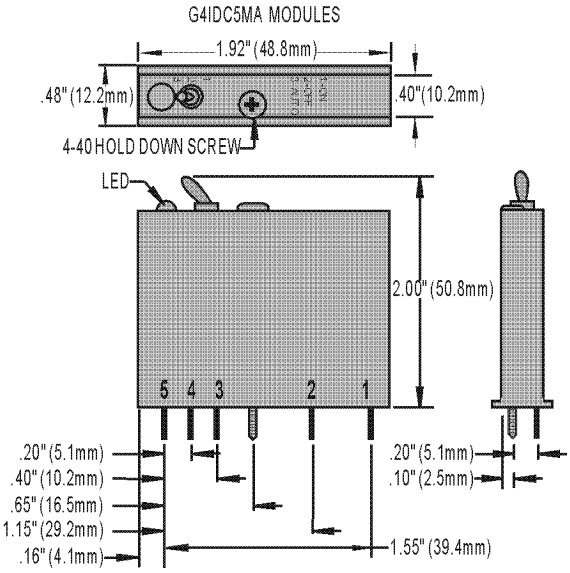
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Schematic



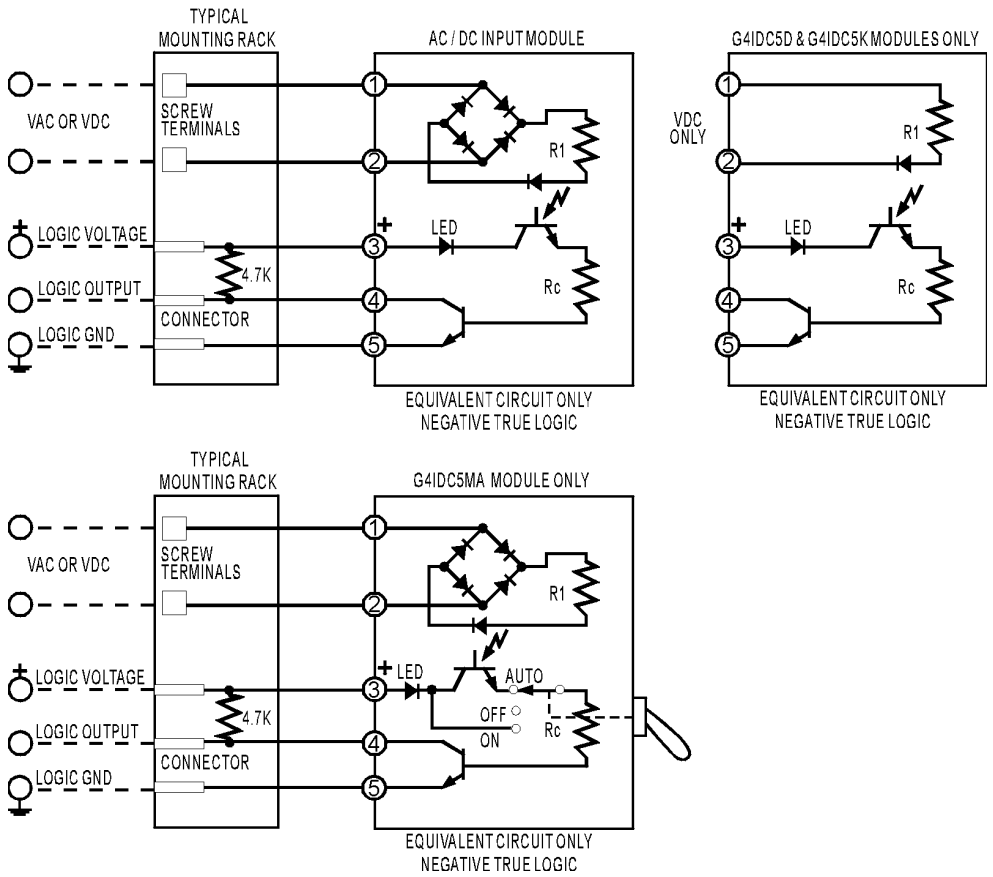
Dimensions





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Schematics



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More about Opto 22

OPTO 22

PRODUCTS

Opto 22 develops and manufactures reliable, easy-to-use, open standards-based hardware and software products. Industrial automation, process control, building automation, industrial refrigeration, remote monitoring, data acquisition, and industrial internet of things (IIoT) applications worldwide all rely on Opto 22.

groov EPIC® System

Opto 22's *groov* Edge Programmable Industrial Controller (EPIC) system gives you an industrially hardened system with guaranteed-for-life I/O, a flexible Linux®-based processor with gateway functions, and software for your automation and IIoT applications.



groov EPIC I/O

groov I/O connects locally to sensors and equipment with up to 24 channels on each I/O module. Modules have a spring-clamp terminal strip, integrated wireway, swing-away cover, and LEDs indicating module health and discrete channel status.

groov I/O is hot swappable, UL Hazardous Locations approved, and ATEX compliant.

groov EPIC Processor

The heart of the system is the *groov* EPIC processor. It handles a wide range of digital, analog, and serial functions for data collection, remote monitoring, process control, and discrete and hybrid manufacturing.

In addition, the EPIC provides secure data communications among physical assets, control systems, software applications, and online services, both on premises and in the cloud.

Configuring and troubleshooting I/O and networking is easier with the EPIC's integrated high-resolution color touchscreen. Authorized users can manage the system locally on the touchscreen or on a monitor connected via the HDMI or USB ports.

groov EPIC Software

Software included in the *groov* EPIC processor:

- PAC Control engine to run PAC Control and PAC Display
- CODESYS Runtime engine to run IEC61131-3 compliant programs built with CODESYS Development System
- Optional access to the Linux operating system through a secure shell (SSH) to download and run custom applications
- *groov* View for building your own device-independent HMI, viewable on the touchscreen, PCs, and mobile devices
- Node-RED for creating simple logic flows from pre-built nodes
- Ignition Edge® from Inductive Automation®, with OPC-UA drivers to Allen-Bradley®, Siemens®, and other control systems, and MQTT communications with Sparkplug for efficient IIoT data transfer

groov RIO

groov RIO revolutionizes remote I/O by offering a single, compact, PoE-powered industrial package with web-based configuration, commissioning, and flow logic software built in, plus support for multiple OT and IT protocols.

Standing alone, it meets the needs of small, variable I/O count applications, especially those that require data logging or data communications, commonly found in IIoT applications. *groov* RIO can also be used with a Modbus/TCP master or as remote I/O for a *groov* EPIC system.

Older products

From solid state relays (our first products) to world-famous G4 and SNAP I/O, to SNAP PAC controllers, older Opto 22 products are still supported and still doing the job at thousands of installations worldwide. You can count on us to give you the reliability and service you expect, now and in the future.

QUALITY

Founded in 1974, Opto 22 has established a worldwide reputation for high-quality products. All are made in the U.S.A. at our manufacturing facility in Temecula, California.

Because we test each product twice before it leaves our factory rather than testing a sample of each batch, we can afford to guarantee most solid-state relays and optically isolated I/O modules for life.

FREE PRODUCT SUPPORT

Opto 22's California-based Product Support Group offers free, comprehensive technical support for Opto 22 products from engineers with decades of training and experience. Support is available in English and Spanish by phone or email, Monday–Friday, 7 a.m. to 5 p.m. PST.

Support is always available on our website, including free online training at OptoU, how-to videos, user's guides, the Opto 22 KnowledgeBase, troubleshooting tips, and OptoForums. In addition, instructor-led, hands-on Premium Factory Training is available at our Temecula, California headquarters, and you can register online.

PURCHASING OPTO 22 PRODUCTS

Opto 22 products are sold directly and through a worldwide network of distributors, partners, and system integrators. For more information, contact Opto 22 headquarters at **800-321-6786** (toll-free in the U.S. and Canada) or **+1-951-695-3000**, or visit our website at www.opto22.com.

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