G4 DIGITAL AC INPUT MODULES

Features

> 4000 volts optical isolation (transient)

> Built-in LED status indicator

> Small footprint design

> UL recognized, CSA certified, CE approved

> Passes NEMA Showering Arc Test (ICS 2-230)

> Meets IEEE Surge Withstand Specification (IEEE-472)

> Built-in filtering for transient suppression and noise rejection

> Operating temperature: -30 °C to 70 °C

G4IAC5 Module

G4IAC5MA Module

DESCRIPTION

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

All AC input modules are designed with filtering on the input and a hysteresis amplifier, providing high noise rejection and transient-free "clean" switching.

The G4IAC5MA is a special module featuring a manual-on/manual-off/automatic switch, ideal for diagnostic testing of control applications.

Typical applications for G4 input modules include sensing the presence or absence of voltage, and sensing contact closure from sources such as proximity switches, limit switches, float switches, selector switches, push buttons, toggle switches, and thermostats.

Compatible with Raspberry Pi

The following G4 digital AC 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:

- G4IAC5
- G4IAC5A
- G4IAC5L
- G4IAC5MA

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Part Numbers

Part	Description
G4IAC5*	G4 AC Input 90–140 VAC/VDC, 5 VDC Logic
G4IAC5A*	G4 AC Input 180–280 VAC/VDC, 5 VDC Logic
G4IAC5L*	G4 AC Input 90–140 VAC/VDC, 5 VDC Logic, Low Input Impedance
G4IAC5MA*	G4 AC Input 90–140 VAC/VDC, 5 VDC Logic with Manual/Auto Switch
G4IAC15	G4 AC Input 90–140 VAC/VDC, 15 VDC Logic
G4IAC15A	G4 AC Input 180–280 VAC/VDC, 15 VDC Logic
G4IAC24	G4 AC Input 90–140 VAC/VDC, 24 VDC Logic
G4IAC24A	G4 AC Input 190–280 VAC/VDC, 24 VDC Logic

* Compatible with Raspberry Pi

MADE IN THE
USA

SPECIFICATIONS

	Units	G4IAC5*	G4IAC5L*	G4IAC5A*	G4IAC5MA*
Input voltage range	VAC or VDC	90–140	90–140	180–280	90–140
Key feature	--	--	Low R in	--	Diagnostic switch
Input current at maximum line	mA	5	11	5	5
Isolation, input-to-output (transient): 1 ms 1 minute	V V	4000 1500	4000 1500	4000 1500	4000 1500
Turn-on time	ms	20	20	20	20
Turn-off time	ms	20	20	20	20
Input allowed for off-state	mA, V	1.4, 40	3, 45	0.7, 45	1.4, 40
Nominal output voltage supply	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	28 K	14 K	70K	28 K
Control resistance (R_c in schematic)	ohms	220	220	220	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	100	100
Transistor	V breakdown	30	30	30	30
Temperature Operating: Storage:	$^\circ$C $^\circ$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

MADE IN THE
USA

OPTO 22 • 800-321-6786 • 1-951-695-3000 • www.opto22.com • sales@opto22.com

SPECIFICATIONS (CONTINUED)

	Units	G4IAC15*	G4IAC15A*	G4IAC24*	G4IAC24A*
Input voltage range	VAC or VDC	90–140	180–280	90–140	180–280
Key feature	--	--	--	--	--
Input current at maximum line	mA	5	5	5	5
Isolation, input-to-output (transient): 1 ms 1 minute	V V	4000 1500	4000 1500	4000 1500	4000 1500
Turn-on time	ms	20	20	20	20
Turn-off time	ms	20	20	20	20
Input allowed for off-state	mA, V	1.4, 40	0.7, 45	1.4, 40	0.7, 45
Nominal output supply voltage	VDC	15	15	24	24
Output supply voltage range	VDC	12–18	12–18	20–30	20–30
Output supply current at nominal logic voltage	mA	15	15	15	15
Input resistance (R1 in schematic)	ohms	28 K	70 K	28 K	70 K
Control resistance (Rc in schematic)	ohms	1 K	1 K	2.2 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
Peak repetitive voltage	VAC	500	500	500	500
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

* Not for use with Opto 22 brains.

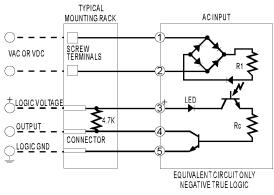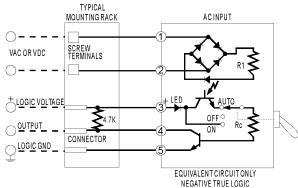## DIMENSIONS

SCHEMATICS

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 is the culmination of over 40 years of experience in designing products for the automation industry.

groov EPIC gives you an industrially hardened system with guaranteed-for-life I/O, a flexible Linux®-based controller with gateway functions, and software for your IIoT application or any application.

groov EPIC I/O

I/O provides the local connection to sensors and equipment. *groov* I/O offers up to 24 channels on each I/O module, with a spring-clamp terminal strip, integrated wireway, and swing-away cover.

Opto 22 I/O is so reliable, we can afford to guarantee it for life. *groov* I/O is hot swappable, UL Hazardous Locations approved, and ATEX compliant.

groov EPIC Controller

The heart of the system is the *groov* EPIC controller. 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, online services, and more, both on premises and in the cloud.

Configuring and troubleshooting I/O and networking is easier with the EPIC's integrated high-resolution touchscreen. Authorized users can see your *groov* View HMI locally on the touchscreen or on a monitor connected via the HDMI or USB ports.

groov EPIC Software

Software includes:

- Flowchart-based PAC Control for control programming, or build your own custom application with optional secure shell access
- *groov* View for building and viewing your own device-independent HMI
- 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/Sparkplug communications for efficient IIoT data transfer

groov Edge Appliance

Visualization, data handling, and connectivity in a compact, industrial box: that's the *groov* Edge Appliance. Included are:

- *groov* View for building and viewing operator interfaces on PCs and mobile
- Node-RED for building simple logic flows
- Ignition Edge® from Inductive Automation®, for OPC-UA drivers and MQTT/Sparkplug IIoT communications

Older products

From solid state relays (our first products) to world-famous G4 and SNAP I/O, to SNAP PAC controllers, Opto 22 products last a long time. You can count on us to give you the reliability and service you expect.

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 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 how-to videos, user's guides, the Opto 22 KnowledgeBase, troubleshooting tips, and OptoForums. In addition, free hands-on 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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