G4 Digital Quadrature Module

Features

- 4000 Vrms transient optical isolation
- Built-in LED status indicators
- 4 times encoder resolution
- Installs on mistic 200 bricks
- Input signals in 4-16 VDC range

G4IDC5Q

Description

The G4IDC5Q quadrature input module pair is designed to allow a digital *mistic* 200 multi-function I/O Brick to resolve positional information from quadrature encoder devices. The module outputs a pulse to the Brick each time the quadrature state changes. The Brick counts the module outputs and keeps track of the direction of rotation.

NOTE: This module cannot be used with an E1 or B1 brain board.

Module Operation

The G4IDC5Q Quadrature Module pair converts a quadrature signal to a pulse stream, which is output on one of the two logic side outputs. The active output is determined by the direction of rotation of the encoder. One 0.8 microsecond pulse is output for each change of quadrature state transition. The actual resolution of the position count is 4 times the encoder resolution (pulses per revolution).

The G4IDC5Q is actually a pair of modules, one of which is labeled "A", the other "B". When the signal into the module A leads the signal into module B, the output will be on module A. When the signal into module B leads the signal into module A, the output will be on module B.

On a digital *mistic* 200 I/O unit, quadrature input channels must be configured in pairs, with the lower channel number being even. Therefore the only quadrature pairs allowed are channels 0 & 1, 2 & 3, 4 & 5, 6 & 7, 8 & 9, 10 & 11, 12 & 13, and 14 & 15.

The positional count is incremented when the signal into the odd-numbered channel leads the signal into the even-numbered channel. It is decremented when the signal into the even-numbered channel leads the signal into the odd-numbered channel.

Since the digital *mistic* 200 I/O unit has a maximum input frequency at 50% duty cycle of 12.5 KHz (see "Specifications" on page 2), then:

$$\text{Maximum Allowable Encoder RPM (at 50\% duty cycle)} = \frac{12{,}000 \text{ pulses/sec}}{\text{encoder pulses/rev}} \times \frac{60 \text{ sec}}{1 \text{ minute}}$$

Part Number

Part	Description
G4IDC5Q	G4 DC Input 2.5-16 VDC, 5 VDC Logic, 2-channel Quadrature

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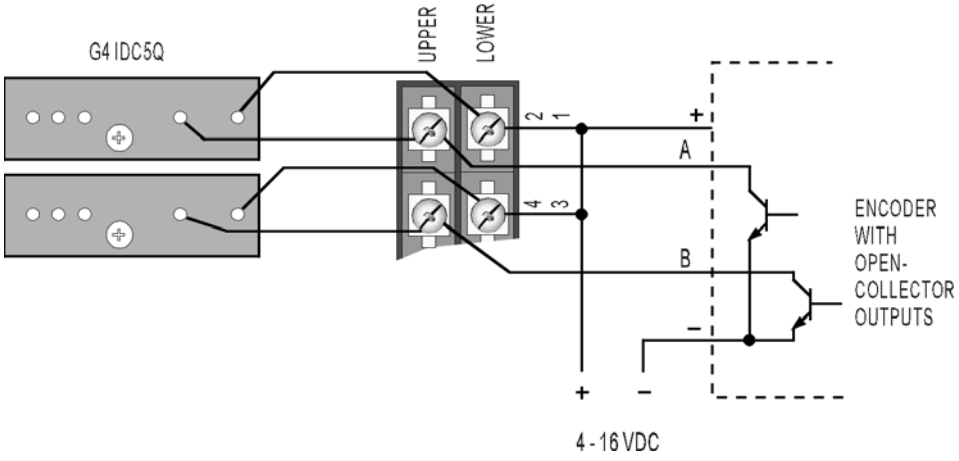
Specifications

Logic Voltage	5 VDC
Operating Ambient Temperature	-30 °C to 70 °C
Isolation input-to-output	4,000 V_{RMS}
Input Voltage Range	4–16 VDC
Input Current	8 mA (constant)
Input Allowed for No Output	1 V
Logic Supply Current @ 5 VDC	60 mA
Maximum Input Frequency, 50% Duty Cycle	12.5 kHz
Minimum Time Between Quadrature State Changes at 90°	20 µsec

Wiring Diagram



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More About Opto 22

Products

Opto 22 develops and manufactures reliable, flexible, easy-to-use hardware and software products for industrial automation, energy management, remote monitoring, and data acquisition applications.

groov

groov puts your system on your mobile device. With zero programming, you can build mobile operator interfaces to monitor and control systems from Allen-Bradley, Siemens, Schneider Electric, Modicon, and many more. Web-based *groov* puts mobile-ready gadgets at your fingertips. Tag them from your existing tag database, and they automatically scale for use on any device with a modern web browser. See groov.com for more information and your free trial.

SNAP PAC System

Designed to simplify the typically complex process of selecting and applying an automation system, the SNAP PAC System consists of four integrated components:

- SNAP PAC controllers
- PAC Project™ Software Suite
- SNAP PAC brains
- SNAP I/O™

SNAP PAC Controllers

Programmable automation controllers (PACs) are multifunctional, modular controllers based on open standards.

Opto 22 has been manufacturing PACs for over two decades. The standalone SNAP PAC S-series, the rack-mounted SNAP PAC R-series, and the software-based SoftPAC™ all handle a wide range of digital, analog, and serial functions for data collection, remote monitoring, process control, and discrete and hybrid manufacturing.

SNAP PACs are based on open Ethernet and Internet Protocol (IP) standards, so you can build or extend a system easily, without the expense and limitations of proprietary networks and protocols. Wired+Wireless™ models are also available.

PAC Project Software Suite

Opto 22's PAC Project Software Suite provides full-featured, cost-effective control programming, HMI (human machine interface) development and runtime, OPC server, and database connectivity software for your SNAP PAC System.

Control programming includes both easy-to-learn flowcharts and optional scripting. Commands are in plain English; variables and I/O point names are fully descriptive.

PAC Project Basic offers control and HMI tools and is free for download on our website, www.opto22.com.

PAC Project Professional, available for separate purchase, adds one SoftPAC, OptoOPCServer, OptoDataLink, options for controller redundancy or segmented networking, and support for legacy Opto 22 serial *mistic*™ I/O units.

SNAP PAC Brains

While SNAP PAC controllers provide central control and data distribution, SNAP PAC brains provide distributed intelligence for I/O processing and communications. Brains offer analog, digital, and serial functions, including thermocouple linearization; PID loop control; and optional high-speed digital counting (up to 20 kHz), quadrature counting, TPO, and pulse generation and measurement.

SNAP I/O

I/O provides the local connection to sensors and equipment. Opto 22 SNAP I/O offers 1 to 32 points of reliable I/O per module, depending on the type of module and your needs. Analog, digital, and serial modules are all mixed on the same mounting rack and controlled by the same processor (SNAP PAC brain or rack-mounted controller).

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 only 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. Our staff of support engineers represents 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.

Additional support is always available on our website: how-to videos, OptoKnowledgeBase, self-training guide, troubleshooting and user's guides, and OptoForums.

In addition, hands-on training is available for free 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 951-695-3000, or visit our website at www.opto22.com.

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