

DATA SHEET

Form 548-040728

Description

Part Numbers	Description
G4IDC5Q	G4 DC Input, 4-16 VDC, 5 VDC Logic, 2-Channel Quadrature

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 will output a pulse to the Brick each quadrature state changes. The Brick will count the module outputs and keep track of direction of rotation.



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

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Module Operation

The G4IDC5Q Quadrature Module pair will convert 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 will increment when the signal into the odd numbered channel leads the signal into the even numbered channel. It will decrement 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, 50% duty cycle, of 12.5 KHz, as shown in the specifications below, then:

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

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