OPTO 22

DATA SHEET

Part Number	Description
G4AD3	4 To 20 mA Input

Description

The G4AD3 module provides a single channel of transformer and optically isolated current-to-digital conversion. The nominal input range is 4 to 20 milliamps with an under/over range capability from less than 3 milliamps to greater than 35 milliamps. One of the unique features is that the isolated loop supply can be provided by the G4AD3. This eliminates the need for the user to provide the loop supply (typically 15-48 V) and also saves the associated wiring, barrier strips, etc. The G4AD3 module also includes complete electrical channel-to-channel isolation which eliminates any ground loop problems. Modules plug into an Opto 22 Modular controller or an analog I/O brick and are secured by a captive screw. The field connections are made to the terminal strip located on the Brick base or controller I/O board.

NOTE: Any system using analog sensors and input modules should be calibrated annually for analog signals. To do so, use OptoControl commands "Calculate and Set Analog Offset" and "Calculate and Set Analog Gain."

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Form 426-050809

Specifications

G4AD3 Specifications

Nominal input range	4 to 20 mA
Module Input Impedance*	414 Ω*
Over/under range	3 to 35 mA
Loop supply	28 VDC nominal
Accuracy**	16 µA**
Response time	Full-scale step change in 3 ms
Resolution	12 bits
Isolation (Transient) Input-to-output Input-to-analog supply	 4,000 Vrms 4,000 Vrms
Ambient temperature Operating Storage	 -30° C to 70° C -40° C to 85° C

* This is the equivalent impedance for the G4AD3 at full scale (20mA). The equivalent impedance is calculated by using the following formula:

$$\text{Equivalent impedance} = 249\,\Omega + 3.3V/0.02A = 414\,\Omega$$

The module has an internal resistance of 249 Ω in series with a 3.3V zener diode.

It is not possible to use an ohm-meter to accurately measure the impedance across the field terminals of the G4AD3. This is because ohm-meters typically supply only 1 volt excitation which is not sufficient to cause current to flow through the 3.3V zener diode. Therefore, the ohm-meter will display infinite impedance (i.e. Mega-ohms, or an open circuit).

In certain applications the total loop impedance may exceed the maximum impedance that the loop transmitter can drive to full scale (20mA). This may be the case in applications using intrinsic safety barriers. An alternate approach is to use the 0 to 5 volt G4AD6 (or G4AD6HS) with a 250 Ω precision resistor (Dale type RN is recommended) across the input terminals. This will provide a 1 volt input at 4mA and a 5 volt input at 20mA.

** Accuracy figure requires use of gain and offset commands.