

DC/DC Converter

Description

The group 4000 is designed to convert any DC input signal to any output signal. Input and output signals are buffered and scaled using laser trimmed monolithic operational amplifier circuits.

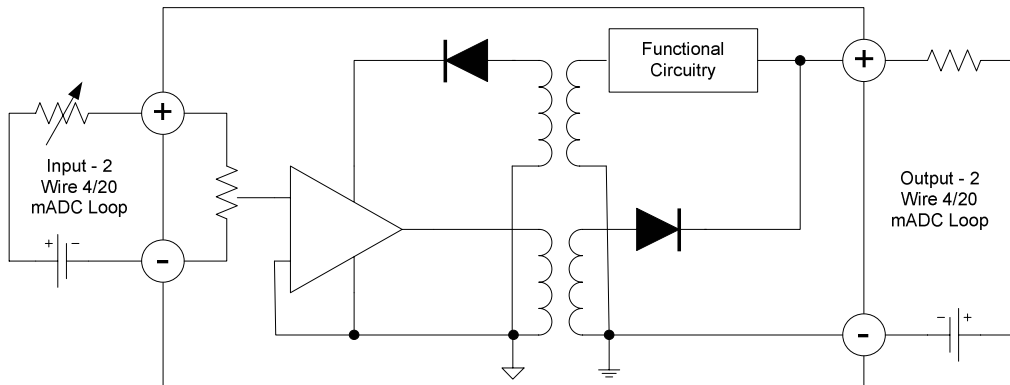
Within the group 4000, there are options for 2-wire, 4-wire, loop powered, single in, dual out, dual in, dual out isolation and non-isolation system requirements. These options are denoted by the number 4000 suffix as described under Product Description in the AGM 'Product Index'.

Operation

2-wire

The signal conditioning circuit uses an auto zeroing amplifier, precision band gap voltage references, a low power cmos oscillator, and a low power current transformer for extreme temperature stability, low lift off voltage, high input/output isolation and high noise immunity. Input/output protection is provided for in case of accidental connection to 117 VAC source.

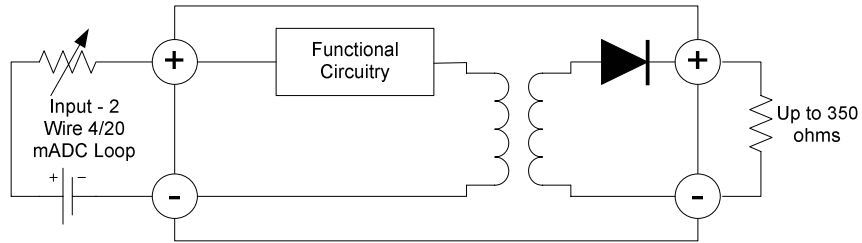
Lift off voltage : 8 VDC
Supply voltage : 8 to 90 vdc



Loop powered

The module can be thought of as a 'DC' transformer. That is, the current signal from the primary input is "chopped" and coupled to the secondary, where it is rectified and used to source the secondary load.

Lift off voltage : 2 VDC
Load drive : 0 to 350 ohms

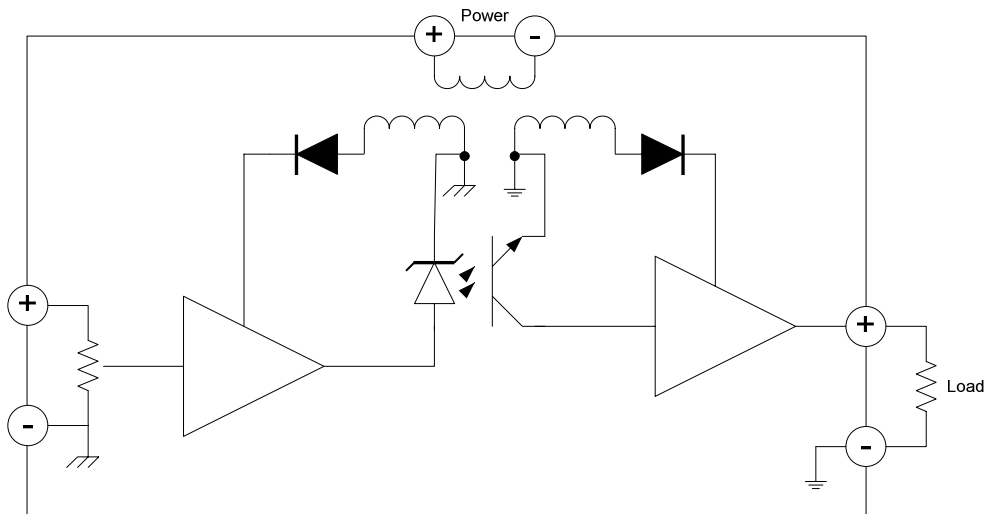


4-Wire

Isolation between the prime power and both input and output signals is standard.

For the option of optical isolation between the input/output signals, the output signals of the buffering and scaling amplifiers are converted to a frequency by a precision linear VCO over a very wide dynamic frequency range. The frequency is coupled to the output side through an optical isolator. The frequency is then converted to a corresponding analog signal and applied to the input of a line driver. For milli-amp outputs, automatic load compensation due to changes in loop resistance using a constant current differential operational amplifier circuit is standard.

The circuits on the input and output sides of the photo-coupler have independent +/- 15 VDC power supplies. These independent supplies are derived from a miniature power supply within the module. The miniature supply consists of a 3-winding transformer: one primary and two secondaries. The primary is driven by a 24 vdc input that is chopped at 30KHZ. The output of each secondary is rectified, filtered and regulated with a dual tracking IC regulator. One +/-15 supply operates all input circuits and the other +/-15vdc operates the output circuits.



General Specifications

Input - any instrumentation type of analog signal can be stipulated.

*Output - Any stipulated instrumentation type of analog signal. e.g. 0/10 vdc. 4/20madc, etc. Any input to output scaling can be specified.

Accuracy - +/-0.10% calibration, repeatability and linearity. Over ambient temperature range, 0/50 deg C and supply regulation is +/-0.25%.

Adjustments - Twenty turn pots for typical +/-15% field variation of input signal offset and span.

Power - 4-wire only. Module power requirements are 24vdc +/- 10% regulation with a maximum of 3 watts. Input and output signals are isolated from 24 vdc are provided by a DC/DC/DC power supply within the module.

Physical - EIA rack, TA panel, PTA dust enclosure, HPM, DIN, AUX or NEM mounting options are available. Refer to the Enclosure/assembly data sheet' for dimensions.

*Open circuit output voltages for current outputs:
600 ohm loop drive is 18.5 vdc max
1500 ohm loop drive is 42.6 vdc max