

Analog/Pulse Summer Converter

Description

The group 4005 Adder/Subtractor is a plug-in modular instrument based on integrated circuit technology and is encapsulated to provide an environmental seal.

Within the group 4005, there are options for analog and pulse system requirements. These options are denoted by the number 4005 suffix as described under Product Description in the AGM 'Product Index'.

Operation

Analog

Any combination of standard analog instrumentation input/output signals can be specified and the signals may be added, subtracted and weighted as desired. One module can algebraically add up to 4 channels. Twenty channels of add/subtract can be assembled using several 4005 modules in a multi-module array. This is referred to as cascading.

Each channel has its own differential amplifier, and therefore each add/subtract channel may be connected anywhere in the instrumentation loop without creating ground loops. Each channel also has independent zero and span calibration controls, which can handle a wide range of signal weightings.

The amplifiers of each channel are zero based during factory calibration, which allows for normal field calibration by only one control per channel. The output may be zeroed by the master offset control.

Low drift monolithic operational amplifiers are used for the differential and summing amplifiers throughout the module. An internal transformer operated DC/DC power supply isolates the add/subtract circuitry from prime power. Bipolar supply voltages to the operational amplifiers are controlled by a monolithic dual-tracking regulator.

The adder/subtractor channels are low bonded at zero scale. If then, in normal operation, a channel's signal is lost or goes below zero scale, the add/subtract module continues to function as if that channel were at zero scale input. This feature allows ordering of spare channels for future use and reduces the possibility of an erroneous output due to transmitter malfunction.

Pulse

The pulse summer is a simple parallel to serial convertor that can accept up to six contact closure inputs simultaneously and sequentially reproduce each of those contacts on the output. This module should only be used for summing totalizer pulses. Maximum input rate per channel is 10 pps.

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%.

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Adjustments - Twenty turn pots for typical +/-50% 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