Pulse Duration Transmitter

Description

The group 5000 Pulse Duration Transmitter which is available in a variety of plug-in/DIN Rail Mount/Surface Mount options is a modular instrument based on integrated circuit technology and is encapsulated to provide an environmental seal.

The group ( ) 5000 converts an electrical analog input signal to a periodic time-proportional electrical-contact closure. The input may be an analog voltage, current or resistance value. The output is a mercury wetted or dry contact closure.

The ( ) 5000 extreme high accuracy is obtained through a design using a unique combination of digital and analog circuit techniques made possible by the use of solid state integrated circuit and hybrid microcircuit technology.

The modular building block design was selected to accommodate both present and future needs of process control systems. Variations in requirements for input and output parameters and their accuracies can easily be met for any application by the mere substitution of one module for another.

Within the group 5000, there are options for DC inputs, 2-wire and 3-wire resistance inputs, strain gage inputs and frequency inputs. These options are denoted by the number 4006 suffix as described under Product Description in the AGM 'Product Index'.

Application

The 5000 is applicable to any process control or remote metering/signaling system using pulse duration modulation (PDM).

Since PDM has been applied for many years in INDUSTRIAL, WASTE WATER TREATMENT, POLLUTION CONTROL, CHEMICAL, and UTILITY Industries, The 5000 has been designed for use with existing equipment.

The 5000 is particularly suitable where wide changes in supply voltage regulation and/or ambient temperatures can adversely affect the accuracy of the systems. All 5000 circuits are temperature compensated to a fine degree and its AC to DC power supply is highly regulated.

Changes in an operating specification can be easily accommodated after the 5000 is installed. This is made possible by the modular construction of the 5000. The total operating specifications are partitioned among the modules; therefore, a change in one operating specification involves only the substitution of one module.

Operation

The 5000 will accept any form of analog signal to produce almost any PDM conversion. This is accomplished through unique circuit design and hybrid circuit construction. (Hybrid circuit construction combines standard-form components with micro-electronics). In the unique circuit design each PDM parameter is independently controlled by the value of only one circuit element. In the hybrid circuit construction, this designated circuit element is maintained as a standard-form component. Therefore, the proper selection of these resistors and capacitors enables the 5000 to be manufactured to almost any operational specifications.

The 5000 converts the analog input to a time proportional to the input. This is accomplished by comparing an internal timing ramp to the input signal. During the time that the timing ramp is less than the input the contacts will be closed. Upon reaching equality the contacts will open and remain open till the timing cycle is completed at which time the ramp is reset to zero by an internal clock synchronized with the 60 Hz line power or a crystal. The above action will occur again during the following cycle.

General Specifications

Signal input Scale: Any analog input scale can be specified at no extra cost.

Examples: Voltage: 1-5 volts, Current: 4-20mA or 10-50mA; Resistance:0-100 ohms

Signal Output: High reliability mercury wetted relay contact rated at 1 amp continuos service for telemetry or a relay rated at 10 amp resistive 115 VAC for chemical feed applications.

Pulse Duration Period: Any fixed period can be specified at no extra cost up to 60 seconds. (Variable with TA 5016)

Full Scale Time Duration Value: Any specified range from 0-100% of period (Variable with TA 5016)

Zero Scale Time Duration Value: Any Specified range from 0-100% of period (Not available with TA 5016) Live zero signal available at no extra cost.

External Connections: Input, Output, Power

Warranty: Seven Year factory service

Stability: vs. Temperature (0-50 deg C) Max. 0.4%
vs.Supply Voltage(100-130vac) Max. 0.001%

Linearity: 0.10

Period Repeatability: Internally synchronized to line or a crystal Max. 0.1%

Overall Accuracy: Over complete temperature and voltage range 0.4%

Power Requirements: 30mA at 115 VAC, 60 Hz , 60 mA at 24 VDC

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