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DESIGN CONSULTANT & MANUFACTURER

- * ELECTRONIC CONTROL SYSTEMS
- * IMPORT SUBSTITUION

DILIGENT RATIOCON 4-20 I 16

In continuous control of combustion process, it is required to adjust fuel and air in right proportion continuously according to the variation in the signal from pressure / temperature controller. However, relationship between fuel valve actuator and damper opening does not remain linear due to complex nature of combustion process. Hence, control signal received from controller has to be modified for optimum results of combustion. For this purpose, complete range is split in number of steps and each step can be multiplied by factor which is expected to give optimum combustion results. Multiplying factor can be set at any value between 0.5 - 1.5 independently for each step. Output signal is clamped to either minimum or maximum values whenever it tries to go beyond these values in any step. Diligent RATIOCON 4-20I 16 is one such controller designed by M/s Diligent Micro Controls to accept 4 - 20 mA dc signal from either pressure / temperature controller and provide modified signal which is also lying in 4 - 20 mA range.

This controller is housed in standard 96 x 96 mm plastic enclosure and it works on 230 V \pm 10%, 50 hz, 1 ph ac supply.

1. Description:

'Diligent Ratiocon 4-20 I 16' accepts 4-20 mA signal at the input terminals on the rear panel of the box. This range is split in 16 steps and 16 presets are provided to modify each step independently with multiplier between 0.5 to 1.5. 16 LEDs are also provided and LED lights when the input signal crosses the step value. Modified output of 4-20 mA, is provided at the out put terminals on the rear panel of the box. When ever out put tries either to go below 4 mA or to go above 20 mA as a result of multiplying factor setting, internal circuit clamps output to 4 mA in the first case and 20 mA in the second case. Clamped status of <4 mA and > 20 mA is indicated by respective LED on the front panel. Rear panel has two terminals which have to be shorted together during Calibration Mode. Power supply Phase, Neutral & Earth are connected at the respective terminals on the rear panel. This could either be 230 V or 110 V +/-10%, 50 hz, 1 phase AC. RATIOCON has 3 digit display which normally indicates the out put current signal and when the switch on left top corner is pressed it indicates the input current; either actual or calibration.

2. Operation:

Diligent RATIOCON becomes operational as soon as the a.c. power supply is connected to it. RATIOCON has two modes of operation; namely Calibration Mode and Normal Mode.

RATIOCON operates in Calibration mode when corresponding terminals on the rear panel are looped together. In this mode internal variable current source is connected to the input stage of RATIOCON and its out put can be varied by the knob located on right top corner. The value of this current can be read on the digital display by pressing the push button. Calibration procedure is as follows –

- a. Turn Calibration Adjustment knob fully anticlockwise till the current value drops below 4 mA. '<4 MA' LED will light as soon as out put current drops below 4 mA and out put current will be clamped to 4 mA.
- b. Turn the Cal. Adj. slowly in clockwise direction till the first step LED (marked '4' on the panel) lights.
- c. Adjust preset below this LED to read the desired out put value on the digital display.
- d. Repeat 'b' & 'c' above for all the remaining steps.
- e. Continue to increase the calibration current beyond 20 mA. '>20 mA' LED will light as soon as the out put current tries to go beyond 20 mA. Out put current will be clamped beyond this at 20 mA.
- f. This completes the calibration and the loop wired between two terminals on the rear panel can now be removed.

RATIOCON enters NORMAL Mode as soon as the loop wired for calibration, is removed. In this case input stage of RATIOCON now receives input signal directly and will generate out put signal according to the preset program.

- 3. The connections details are given on the rear panel and are self explanatory.
- **4.** This instrument is not *site maintainable*.
- 5. Diligent RATIOCON carries warranty for twelve months from the date of its delivery from our works. During this period, we undertake to repair/replace free of cost our defective unit in part or full at our total discretion provided that such unit is brought to our works for rectification and collected there from after satisfactory inspection by the customer at his cost & risk and provided that the defect is due to poor material and/or workmanship and not due to misuse and/or mishandling. This warranty is exclusively limited to the unit supplied by us and we shall not be responsible in any ways for any of the consequences of its use and/or misuse any where. This warranty shall automatically become null & void if our unit is opened/tampered by person not authorised by us.

6. Specifications:

Power Supply 230V or 110 V, 50 hz, 1 ph AC supply

Input Signal4-20 mA dc.Input burden100 ohms.Output Signal4-20 mA dc.Output burden400 ohms.Calibration current sourceInternalDigital Display3 digits

Output under / over range Output clamped to respective limits. (Minimum at 4 mA

& Maximum at 20 mA). Status LEDs provided

Modes of Operation Calibration and Normal

Size Standard size 96 mm x 96 mm x 150 mm

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