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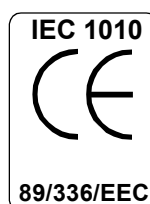
Web site with news, distribution details, product descriptions <http://ds.dial.pipex.com/meters/>

Operating Instructions

Model RATE-4L

4 digit Frequency/Rate panel meters
20mm digit height

Some additional products from London Electronics Ltd.....



VERY IMPORTANT WARNINGS



You should carefully read all warnings and commence installation ONLY when you are satisfied that all warnings are adequately covered.



! Connections to this equipment shall be carried out in accordance with current IEE regulations, and all wiring shall be separated in accordance with IEC1010

Notes:

! Power supplies to this equipment must be anti-surge fused at 125mA for 230V supply, 250mA for 110V supply or 630mA for DC supplies in the range 12-30VDC

Notes:

! Before installation, check that model number and supply voltage suit your application

Notes:

! Lethal voltages may be present on the circuit board. Do not touch any circuitry when power is applied.

Notes:

! This product is designed for Installation class II service

Notes:

! This product is designed for use in Pollution-Degree 2 environments

Notes:

! Use an insulated screwdriver when adjusting potentiometers and do not touch any circuitry

Notes:

! Replace front cover when meter is unattended

Notes:

! All adjustments to jumper settings or terminations must be made with power removed

Notes:

! Ensure all screw terminals are tight before applying power.

Notes:

**Safety FirstDon't make assumptions..... Always double check.
If in doubt, ask someone who is QUALIFIED to assist you in the subject.**

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IMPORTANT INTRODUCTORY NOTES

Thank you for choosing to use a London Electronics Ltd. product. We hope that you will be entirely satisfied with your purchase, and welcome any comments you may have which will help us to improve the ease of use, clarity of this manual, etc. for future shipments.

We invite you to write to us, free of charge, if posted in the United Kingdom, to:-

**London Electronics Ltd.
Customer Services Department
FREEPOST SG334
SHEFFORD
Bedfordshire SG17 5BR**

Alternatively you may send us a fax on **01462-850968** (international code +44)
Or, telephone us on **01462-850967** (international code +44)

Or, send us an E-Mail to **meters@dial.pipex.com**

To enable us to provide a swift and accurate service, please be sure to provide the following information :-

- 1) Full Model Number , including all options fitted.
- 2) Serial Number
- 3) DETAILED description of your difficulties, suggestions etc.
- 4) Input Range and Display range

This product is covered by a 2 year warranty, during which period we will put right or replace any meter found to be faulty through bad workmanship or materials. This warranty does not cover damage caused by misuse or accident.

IMPORTANT If the meter is a vital component in your process, you may wish to consider the purchase of a spare to cover the possible eventuality of a failure or accident, as we cannot guarantee instant repair or replacement.

We are constantly striving to improve our products and services, and as a result, changes to instruments do occur. Please ensure that this manual is kept safely for future reference, as future manuals, covering revised designs may no longer describe your product accurately.

We believe these instructions to be accurate, and the product to be competently designed and manufactured. We do not make any claims as to the suitability of this product for any particular application. The choice of product and responsibility for the choice lies with the User.

EQUIPMENT SPECIFICATIONS

Input Signal.....NPN/PNP, contact closure or voltage pulses
Input Resistance.....4K7 pull up or pull down
Resolution.....1 in 9999
CMRR.....70 dB DC to 450 Hz.
NMRR.....56 dB 45 to 10000 Hz.
Open Circuit Input Response.....Downscale Drive
Speed of Response.....Display = 2.5/sec. *See separate sections below for analogue & alarm speeds*
Decimal Point Selection.....Push-on Jumpers
Accuracy.....0.1% of reading
Temperature stability.....50 ppm of range/C span and zero
A/D Technique.....F to V folowed by Dual Slope integration
Conversion Rate.....2 1/2 conversions per second (every 400 mS)
Integration Time.....100 mS

Display.....High brightness LED
Digit Height.....20 mm 0.8"
Digit Colour.....Red as standard, optionally green

Excitation Supply.....Selectable 10 or 24VDC, regulated. Others possible, including constant current.
Accuracy.....+/-5% accuracy. Stability is 50ppm/C
Current Capacity.....120mA for 10V, 30mA for 24V

Power Supply
AC Supply.....110 or 230 VAC as standard. 24VAC optional Others possible on request
DC Supply.....10 to 30 VDC as an option. Also 5V +/-5%.
Current Consumption.....Allow 8VA if all options fitted & excitation supply fully loaded.

Mechanical
Bezel Size.....48mm high by 96mm wide
Cutout Size.....45 mm high by 92 mm wide
Depth behind Panel.....125 mm
Weight.....550 grammes typically
Case Material.....UL 94V0 rated black ABS

Environmental
Operating Temperature.....-20 to +50 degrees C
Storage Temperature.....-40 to +85 degrees C
Humidity.....90% rh max. at 40 C, non condensing.

PANEL REQUIREMENTS



All wiring to this meter must be carried out in accordance with current IEC regulations
Separation of all power carrying cables must be ensured in accordance with IEC 1010

Installation Class II
Pollution degree 2



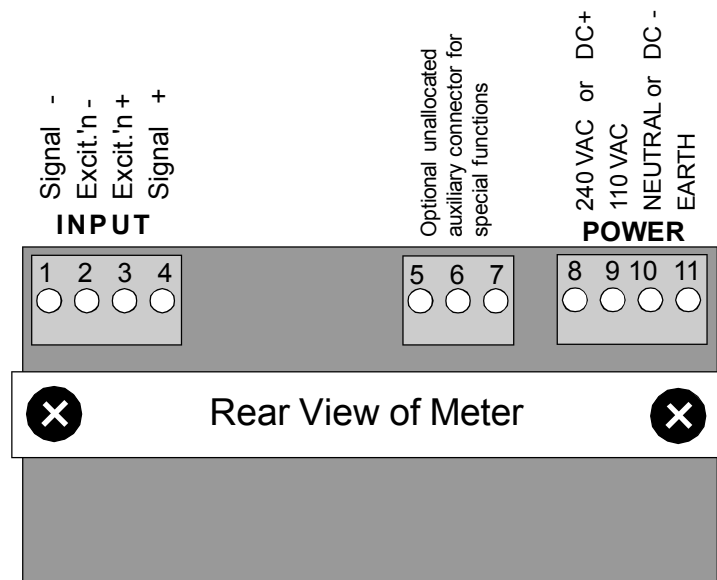
This meter is to be installed within a secure enclosure, to prevent accidental access by persons to the powered connections present on the meter's rear terminals.

CUTOUT DIMENSIONS

A hole 45 mm high and 92 mm wide, with minimal radius is required

Connections

Connector Specifications :- [VDE Rated Voltage, group B insulation VAC = 380]-[VDE Rated Current = 8 Amperes.]
[Vibration Immunity per VDE0611 <10g]-[Rated Number of mating cycles <100]-[Screw Clamp material/plating Steel/ZnCe]
[Contact Spring material/plating CuSN/gal SnPb]-[Plug-in force, per pole is from 3 to 6 Newtons]-[Disconnect force per pole is from 4 to 7 Newtons]-[Screw clamp tightening torque recommended 0.5Nm]-[Solid wire csa between 0.13 to 1.5mm²] [Multistrand wire csa from 0.5 to 1.5mm²]-[AWG conductor range from 22 to 16]-[Gauge to DIN/EN50027 Size A1]

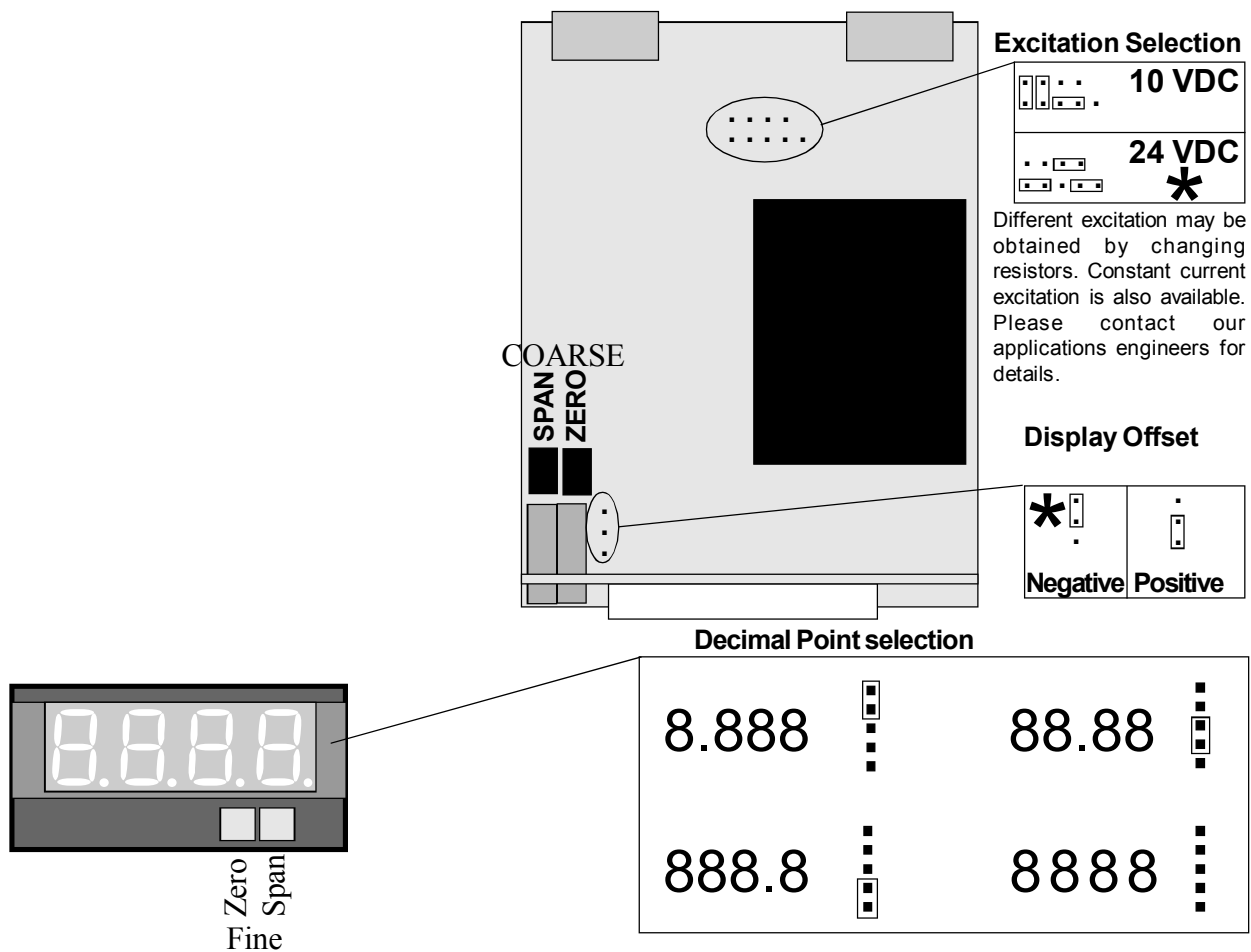


IMPORTANT: Do not run signal wires near any power-carrying cables. Power-carrying cables will almost certainly radiate appreciable amounts of electro-magnetic energy, which could interfere with the small signals you are trying to measure. Use screened cable, in its own separate conduit or tray. Connect the screen at one end only, to a clean earth point as near to the meter as possible.

ADJUSTMENTS & CALIBRATION

To calibrate the display or alter decimal point positions, you will need to remove the circuit assembly from its case. To do so, remove power from the display and disconnect all plug-in connectors from the rear of the meter. Then, clip off the front bezel.

Undo the small screw on the top surface of the case, at the rear, and slide the assembly forward out of the front aperture to reveal all the adjustments.



Calibration adjustments ...

- 1) Apply 0% input signal and adjust the fine zero pot for 0% display
- 2) Apply 100% input signal and adjust the fine span pot for 100% display
- 3) Repeat steps 1 & 2 until no further adjustment is required.
- 4) Apply 25%, 50 % and 75% of input and check linearity

Note: If you are unable to obtain the desired scaling using the fine zero and span pots, please adjust the meter using the coarse zero and span, and then use the fine zero and span for precise trimming.

Declaration of Conformity

Declaration Number : RATE-LI Iss. 1
Issue Date : 21 April 1997
Products Covered : RATE-3 & 4 series
Title : DOC-RATE

This is to confirm that the Products covered by this declaration have been designed and manufactured to meet the following specifications :

EN55022:1987 Conducted Emissions: Class B
EN55022:1987 Radiated Emissions : Class B
IEC801-2:1984 Electro-Static Discharge Immunity: 8kV Air
IEC801-3:1984 Radiated ElectroMagnetic field Immunity: 3V/m
IEC801-4:1988 Fast Transient Immunity : AC 1kV, cable 0.5kV

Thus the products conform with the applicable sections of the following standards:

EN50081-1:1992 (normative)
EN50082-1:1992 (normative)

and comply with the requirements of Council Directive 89/336/EEC relating to Electro-Magnetic Compatibility, & are designed to meet 72/23/EEC safety directive.

To confirm EMC compliance, representative models within the range have been independently tested and certified by MARCONI INSTRUMENTS EMC Department.

MARCONI CERTIFICATE # : TC95/0074C
MARCONI CERTIFICATE Issue # : 1
MARCONI Certificate Issue Date : 3 July 1995

Conditions

The meters are permitted a worst case error of 1% of A/D range during electro-magnetic disturbance, and must recover automatically when disturbance ceases without the need for human intervention, such as resetting, power-down etc.

The meters covered by this certificate must be installed in adherence to the following conditions :-

Signal cabling shall be routed separately to power carrying cabling (includes relay output wiring)
All signal cabling shall be screened. The screen shall only be terminated to the power earth terminal

This certificate applies only to meters carrying Serial Numbers 701001 or higher.

Signed as true and correct, for and on behalf of London Electronics Ltd.