

London Electronics Limited

Warren Court, Chicksands, Shefford, SG17 5QB, England

Tel: 01462 850967 Fax: 01462-850968 International prefix +44

E-Mail meters@dial.pipex.com

Web site with full catalogue <http://ds.dial.pipex.com/meters/>

Operating Instructions

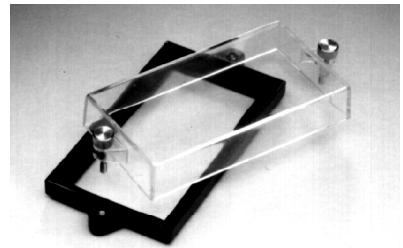
Model MINI-RATE **5 digit RateMeter** **Fully Scaleable** **Dual alarms**

Other Products available from London Electronics Ltd.....

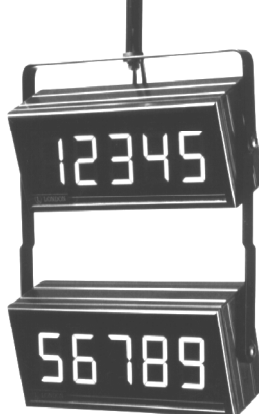
PROCESS CALIBRATORS



IP65 SPLASHPROOF COVERS



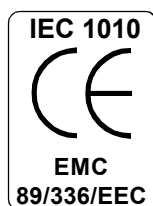
LARGE DISPLAYS



PANEL METERS & CONTROLLERS



SIGNAL TRANSMITTERS




These instructions cover product with main board Rev. 6 or higher

Document Ref:MiniRate

Doc.Revision: 4

Dated: 8 January 99

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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.**

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.....Contact closure/3-30V DC pulses/30mV-30V AC, by appropriate jumper choice
Resolution.....1 input Count
Input Resistance.....4700 Ohms
CMRR.....70 dB
NMRR.....not specified
Open Circuit Input Response.....No count
Speed of Response.....Accepts pulses up to 10 KHz for AC or DC, up to 20 Hz. for contact closure
Decimal Point Selection.....Via menu
Accuracy.....+/-0.01% of range
Timeout facility.....Automatic reset to zero if no pulse received within 3, 10, 30, 60 or 120 seconds
Temperature stability.....25 ppm of reading/C
A/D Technique.....No analogue I/P
Conversion Rate.....3 per second maximum display update
Integration Time.....No integration employed

Display Type.....LED
Digit Height.....14.2 mm
Digit Colour.....Red standard, Green optional

Excitation Supply.....24 VDC
Accuracy.....+/- 10% of nominal, regulated 0.1%
Current Capacity.....30 mA maximum

Power Supply

AC Supply.....110/115 , 220/230 , 240 VAC selection by internal jumper
DC Supply.....5VDC or 10-30 VDC by appropriate option
Power Consumption.....5 VA maximum

Mechanical

Bezel Size.....48 mm high x 96 mm wide
Cutout Size.....45 mm high x 92 mm wide +1mm/-0mm
Depth behind Panel.....80 mm
Weight.....350 grammes
Case Material.....Polycarbonate

Environmental

Operating Temperature.....0-50 degrees C
Storage Temperature.....-40 to +80 degrees C
Humidity.....90 % rh non condensing maximum

Analogue O/P.....nil
Drive Capacity.....nil
Isolation.....nil
Speed of Response.....nil
Accuracy.....nil
Linearity.....nil

Alarm O/P

Format.....Solid state triac for AC loads only
Current Rating.....100 mA AC
Voltage Rating.....250 VAC
Speed of Response.....0.3 second
Hysteresis.....1 count
Annunciation.....LED
Setting Method.....Menu

BCD O/P.....nil
Format.....nil
Data Levels.....nil

Serial Data O/P.....nil
Baud Rate.....nil
Addressing.....nil
Format.....nil
Connections.....nil

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.

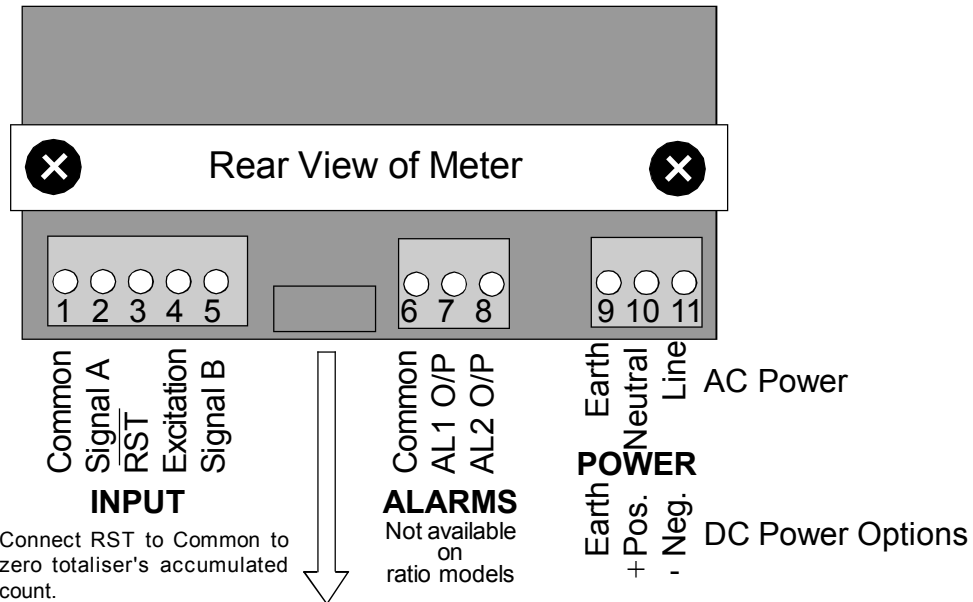
Allow 100mm behind panel

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/ZnCo]
 [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]



Input Type	No Debounce	Debounce	Connection Notes
Contact Closure Inputs	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Sig. A Debounce jumpers should be fitted Common
NPN Sensor Inputs	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Excitation Signal A (Input pulled up to Exc. via 4K7) Common
PNP Sensor Inputs	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Excitation Signal A (Input pulled down to Common via 4K7) Common
Mains Frequency Input	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> not available	signal taken from one of the secondary windings of the mains transformer

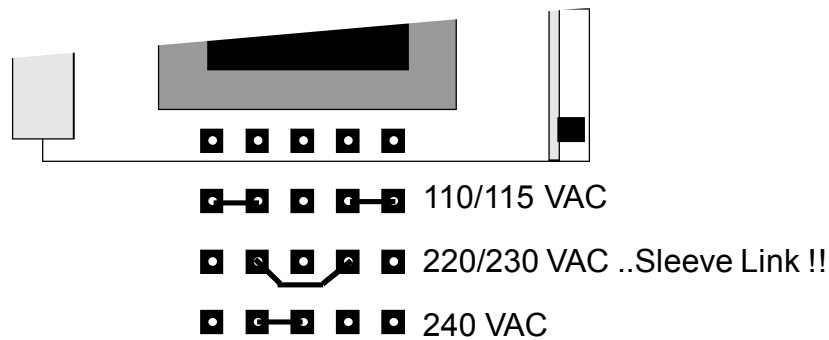
NB For direct application of voltage signals, remove all jumpers. For signals in the range 50mV to 30V fit solder jumper on track side of PCB, under R10

AVOID DISAPPOINTMENT! Route all signals via individually screened cables. Do not mix input and output signals in the same screened cable. Earth the screens at a point as near to the meter as possible and do not earth the screen at the other end. Route all signal cables well away from power cables, relay switching cables and other sources of electrical noise.

ADJUSTMENTS & CALIBRATION

1) Check rating label to ensure the power supply (110 or 240 VAC) mentioned on the label agrees with that you propose to use for the ratemeter.

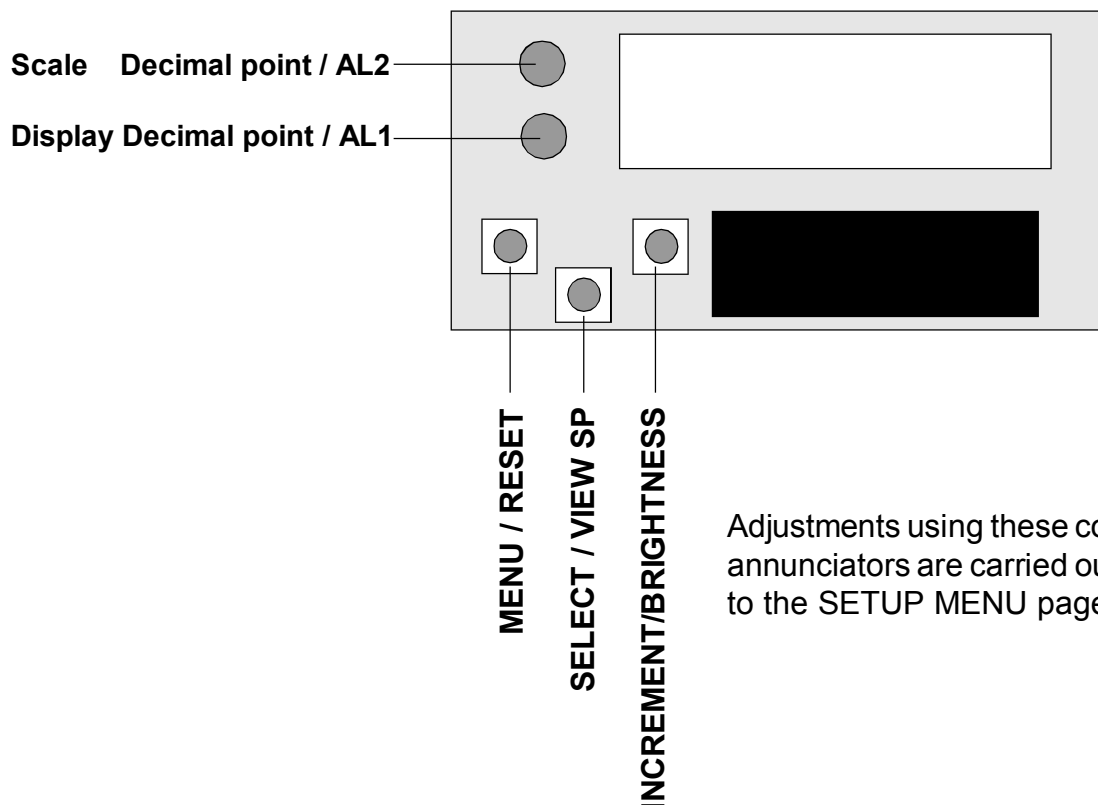
To change the supply, you will need to remove the board from its case and alter some solder-in links associated with the transformer primary, as shown below ... AMEND RATING LABEL !



2) Input Signal Level.

The MINI-RATE has an input pre-amplifier to allow low-level signals to be accepted (between 50mV to 30V). This amplifier is enabled by closing a solder switch. Remove the board from the case and locate the two square solder pads under R10. Apply a blob of solder to bridge the gap between the two pads. Re-install the assembly in the case.

3) Calibration. You can alter the scale factor, decimal point position, brightness, alarm values & alarm action using 3 pushbuttons behind the lens.



Insert Menu page here

Declaration of Conformity

Declaration Number : MINI-COUNT/RATE Iss. 1
Issue Date : 21 April 1997
Products Covered : MINI-COUNT & MINI-RATE
Title : DOC. MINI-COUNT/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 REPORT # : TR 97/062
MARCONI CERTIFICATE Issue #:1
MARCONI Certificate Issue Date : 11 April 1997

Conditions

The meters are permitted a worst case error of 0% 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 716001 or higher.

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

Warren Court, Beds.

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J.R. Lees Director