

# INSTRUCTION MANUAL

## DIGITAL UREA/DEF METER

ADTUM



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### INTRODUCTION

Thank you for purchasing a Macnaught ADTUM Electronic Turbine Meter

The Macnaught digital turbine meter is a highly reliable accurate method of measuring flow, providing exceptional repeatability and accuracy.

The low pressure drop through the meter makes the meter ideally suited for use in gravity applications or with the Macnaught range of electric Urea (DEF) pumps.

Macnaught manufacture a full range of pumps, meters and accessories to suit most of your fluid transfer needs. Please consult your local Macnaught reseller for more information.

Please read and retain this instruction manual to assist you in the operation and maintenance of this quality product.

### GENERAL INFORMATION

This manual assists you in operating and maintaining your new turbine Urea (DEF) meter. The information contained will help you ensure many years of dependable performance and trouble free operation.

Your in-line turbine meter is designed to accurately measure Urea (DEF) and water. The meter is ideal for use as an in-line meter or on piping, mobile installations, generally fitted close to the dispensing nozzle.



#### CAUTION

Observe precautions against fire or explosion when dispensing flammable liquid. Do not operate the meter in the presence of any source of ignition including running or hot engines, lighted cigarettes or gas or electric heaters.

Ensure that you follow all the correct earthing and grounding procedures before use.

Inspect seals and connections for leaks weekly when using flammable liquids.

**Do not** use Teflon tape on any connections when using flammable liquid.

**Do not** use this meter with gasoline or any fluid other than the compatible fluid specified in this manual.

**Do not** use the meter above the maximum pressure of 3.5 bar



### FEATURES

The meter has many built in functions:-

- a) Resettable Batch total
- b) Non-Resettable total
- c) View the last 5 dispensed volumes
- d) Input stock level
- e) Low stock alarm
- f) View instantaneous flow rate
- g) Calibration function
- h) Change unit of measure (litre, gallon, pint, quart)

### OPERATION

The display turns on when either fluid passes through the meter or one of the buttons is pressed

The display will automatically turn off after 2 minutes if no flow is recorded through the meter, at the same time the display returns to the batch total which resets to zero.

The meter defaults to the batch total after 10 seconds if one of the buttons is not pressed during this time.

The meter display has 6 digits and two buttons 'Reset' and 'Total'

### MAIN SCREEN FUNCTION

Note: The reset total appears when a button is pressed.

#### 1) Total Litres

Press 'Total' (x1)

'Total' appears followed by litres then the amount

#### 2) Resettable accumulative total

Press 'Total' (x2)

'Total Period' appears followed by the resettable accumulative total amount

(can be reset to zero by pressing 'Reset')

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### 3) Tank Stock

Press 'Total' (x3)

'Stock' appears followed by the set amount

a) To insert available stock press 'Reset' the value will start flashing, the value can now be changed by pressing 'Reset' to increase value or 'Total' to decrease value.

b) Wait 10 seconds to confirm until display returns to the batch total

### 4) Minimum Stock Alarm

Press 'Total' (x 4)

'Alert' appears followed by the minimum value which has been set.

a) To insert available stock press 'Reset' the value will start flashing, the value can now be changed by pressing 'Reset' to increase value or 'Total' to decrease value.

b) Wait 10 seconds to confirm until display returns to the batch total

Note: when available stock reaches minimum value the

'Alert' will appear and start flashing.

## LAST SCREEN TRANSACTIONS

The batch total can be reset to zero by pressing 'Reset'

The meter can show the last 5 volumes dispensed by pressing 'Reset' to scroll through the totals, the 5th volume is shown by pressing 'Total'

## INSTANTANEOUS FLOW RATE

To show the instantaneous flow rate, press and hold down the 'Reset' button

## SELECT UNIT OF MEASURE

Starting from the batch total screen

- 1) Press and hold down the 'Total' button until 'Units' appears, ('Units' will start flashing)
- 2) Press 'Reset' button (the pre-set units will be displayed)
- 3) Press 'Total' to scroll through to the desired units (litres, US gal, quarts, pints, custom)
- 4) Press 'Reset' to accept
- 5) Display will return to Batch total after 10 seconds

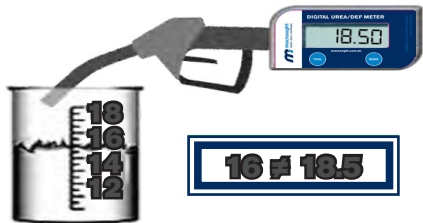
Note: For custom unit or measure please contact Macnaught for details.

## CALIBRATION

The meter has been calibrated with water at 20 deg C. Calibration is required if metering a different fluid ,at a different temperature or after excessive wear.

An accurate measuring container of at least 19 litre capacity will be required.

**Note:** The calibration quantity must be more than 5 litres



Starting from the batch total screen

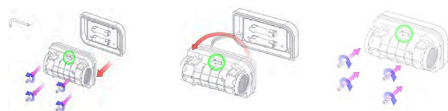
- 1) Prime the system.
- 2) Fully open nozzle, dispense at least 5 litres of fluid into an accurate measuring container. (flow rate must be above 10 ltr/min)
- 3) If the display volume is not matching the dispensed volume - calibrate.
- 4) Press the 'Reset' button to enter the calibration mode. ('CAL' will now start flashing)
- 5) Press 'Reset' to view last volume now flashing
- 6) To increase or decrease recorded volume, press the 'Total' or 'Reset' button
- 7) To confirm new calibration wait 10 seconds. The last 5 recorded volumes will also change to the new setting.

## DISPLAY ORIENTATION

The display can be rotated 180° deg when required.

- 1) Remove the 4 screws on the back of the meter
- 2) Rotate the meter body 180° deg
- 3) Reposition the meter body (Take care not to damage the wires)
- 4) Carefully re-fit the 4 screws to the meter assembly

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## MAINTENANCE

This meter has been designed for minimum maintenance. If you have a problem with this unit please contact you local Macnaught service centre or distributor.

## TEST LCD

Press both the 'Total' and 'Reset' buttons together for 2 seconds. The system will then show the following information.

The LCD system check shows the following in sequence

1. Product name - 'DI FLOW'
2. Software version - r1.0
3. Current unit of measure 'Unit' 'Litres'
4. Current calibration factor (imp/L: 'CAL' '40.00')
5. Remaining voltage 'bat Vol' '2.79'  
(if more than 2.8V will read 'FULL')
6. Battery capacity remaining e.g. 'bat Per' '52.95'  
(only shown when voltage is less than 2.8 volts)

## BATTERY REPLACEMENT

If remaining battery power is less than 0.9 Volt the battery icon will display (bottom right) and battery replacement is required.

1. Remove the 4 screws on the back of the meter.
2. Replace the 2 batteries (use 2 x AAA 1.5V Alkaline)
3. Refit the display (make sure not to damage the wires)
4. Carefully fit and tighten the 4 x screws



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### TROUBLE SHOOTING GUIDE

Problem	Cause	Solution
Meter not reading	1) Blockage in the fluid chamber	1) Clear blockage from fluid chamber
	2) Meter installed incorrectly	2) Check the meter orientation (flow must be in direction of the arrow)
	3) Broken reed switch	3) Replacement meter required
Display does not turn on	1) Flat batteries	1) Replace batteries
	2) Bad battery connection	2) Check battery orientation
Inaccurate reading	1) Flow rate too high	1) Adjust flow rate to meter specifications
	2) Incorrect calibration	2) Re-calibrate meter
	3) Air in the system	3) Re-seal all connections
	4) Dirty magnets	4) Clean magnets

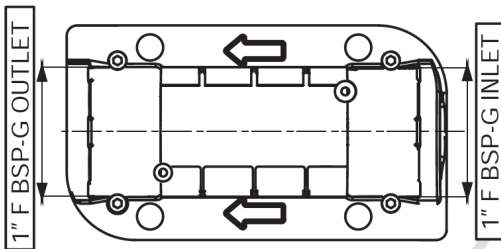
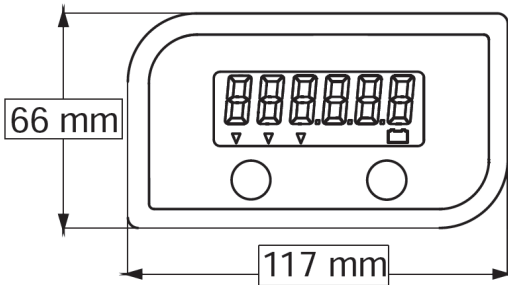
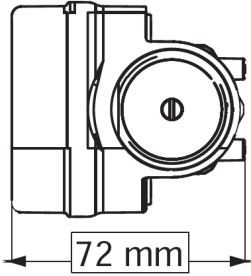
### SPECIFICATIONS

Meter Type	Turbine
Flow rate	10 - 150ltr/min
Maximum pressure	3.5bar (50psi)
Accuracy	+/- 0.5%
Power supply	2 x 1.5V AAA batteries
Inlet / Outlet	1" BSP (F)
Temperature	-10 deg C / +60 deg C
Display	6 digits LCD
IP Rating	IP65
Weight	0.25 kg
Fluid Compatibility	Urea, DEF, Water

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## METER DIMENSIONS





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**NOTES:**



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Built to last since 1948.

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For a list of Australian Service Centres see [www.macnaught.com.au](http://www.macnaught.com.au)