

Operating Manual

RISH DPM Hz



2-60-006-00-00512_Rev. A - 5/2014

DIGITAL MULTIFUNCTION INSTRUMENT

Programmable Digital Panel Meter

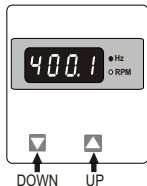
Installation & Operating Instructions

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1. INTRODUCTION

The **DPM HZ** is a panel mounted 96 x 96mm DIN Quadratic Digital Panel Meter for the measurement of important electrical parameters like Frequency, RPM.

The instrument integrates accurate measurement technology with 4 digits Ultra high bright LED display.



DPM Hz can be configured and Programmed On site for number of poles.

The front panel has two push buttons using which the user can scroll through different screens and configure the product.

2. MEASUREMENT READING SCREENS

In normal operation, the user is presented with one of the measurement reading screens out of several screens. These screens may be scrolled through one at a time in incremental order by pressing the "UP key" and in decremental order by pressing "DOWN key".

TABLE 1: Measured Parameters:

| Sr No. | Measured Parameters | Unit |
|--------|---------------------|------|
| 1 | Frequency | Hz |
| 2 | RPM | |
| 3 | Max Frequency | Hz |
| 4 | Min Frequency | Hz |

3. Programming

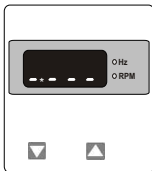
The following sections comprise step by step procedures for configuring the DPM Hz for individual user requirements. To access the set-up screens press and hold the "DOWN" and "UP" keys Simultaneously. This will take the User into the Password Entry screen (Section 3.1).

In Setup mode, if none of the key pressed within 1 min, it will returns operation to the measurement mode.

3.1. Password Protection

Password protection can be enabled to prevent unauthorized access to set-up screens, by default password protection is not enabled.

Password protection is enabled by selecting a four digit number other than 0000, setting a password of 0000 disables the password protection.



Password Entry:

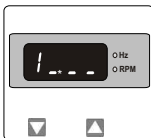
Enter Password, prompt for first digit.

(* Denotes that decimal point will be flashing).

Press the "DOWN" key to scroll the value of the first digit from 0 through to 9, the value will wrap from 9 round to 0.

Press the "UP" key to advance to next digit.

In the special case where the Password is "0000" pressing the "UP" key when prompted for the first digit will advance to the "Password Confirmed" screen.



Enter Password, first digit entered, prompt for second digit.(* Denotes that decimal point will be flashing).

Press the "DOWN" key to scroll the value of the second digit from 0 through to 9, the value will wrap from 9 round to 0.

Press the "UP" key to advance to next digit.



Enter Password, second digit entered, prompt for third digit.(* Denotes that decimal point will be flashing).

Press the "DOWN" key to scroll the value of the third digit from 0 through to 9, the value will wrap from 9 round to 0.

Press the "UP" key to advance to password confirmation screen.



Enter Password, third digit entered, prompt for Fourth digit.(* Denotes that decimal point will be flashing).

Press the "DOWN" key to scroll the value of the fourth digit from 0 through to 9, the value will wrap from 9 round to 0.

Press the "UP" key to advance to password confirmation screen.

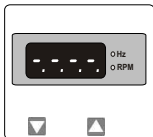


Enter Password, fourth digit entered, Awaiting verification of password.
Password confirmed.

Pressing "DOWN" key will advance to the "New / change Password" entry stage.

Pressing the "UP" key will advance to the setup screen.

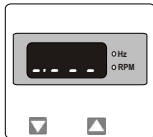
(See section 3.2).



Password Incorrect.

The unit has not accepted the Password entered.
Pressing the "DOWN" key will return to the Enter Password stage.

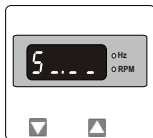
Pressing the "UP"key exits the Password menu and returns operation to the measurement reading mode.



New / Change Password

Pressing the "DOWN" key will scroll the value of the first Digit from 0 through to 9, the value will wrap from 9 round to 0.

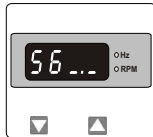
Pressing the " UP" key to advance the operation to the next digit and sets the first digit.



New / Change Password, first digit entered, prompting for second digit.

Pressing the "DOWN" key will scroll the value of second digit from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the "UP" key to advance the operation to the Next digit and sets the second digit.



New / Change Password, second digit entered, prompting for third digit.

Pressing the "DOWN" key will scroll the value of the third from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the "UP" key to advance the operation to the Next digit and sets the third digit.



New / Change Password, third digit entered, prompting for fourth digit.

Pressing the "DOWN" key will scroll the value of the fourth from 0 through to 9, the value will wrap from 9 round to 0.

Pressing the "UP" key to advance the operation to the "New Password Confirmation" screen and sets the fourth digit.



New / Change Password, fourth digit entered, Awaiting for confirmation.

Pressing the "UP" key to advance the operation to the "New Password Confirmation" screen and sets the fourth digit.



New Password confirmed.

Pressing the "DOWN" key will return to the "New/Change Password".

Pressing the "UP" key will advances to the Set up screen.
(see section 3.2).

3.2 Set Up Screens

3.2.1. Reset



The following screens allow the users to reset the Min and Max. values of Frequency.

Pressing the "DOWN" key will enter the "Reset edit" menu.

Pressing the "UP" key will Reset None and enter into Auto scrolling / fixed screen selection menu.



Edit the Reset of Parameters

Pressing "DOWN" will scroll the parameters in sequence as Follow :

1. All : To reset All parameters,
2. Hi : To reset Max values,
3. Lo : To reset min. Values,
4. None : No to reset any of the Parameters,

Select the Correct parameter to Reset and then Press "UP" key. This will enter to Reset Parameter Confirmation Screen.

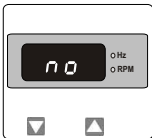


Confirmation of parameter for RESET

Pressing "DOWN" will enter back to the reset menu and scroll between the above parameters.

Pressing "UP" key will Reset the Selected Parameter. Then it will enter to auto scrolling or fixed screen selection parameter.

3.2.2 Auto scrolling / Fixed Screen selection



This menu allow to select scrolling or fixed screen.

Pressing "UP" key enters confirmation of Fixed Screen.

Pressing of "DOWN" key enters to Edit menu.



Fixed Screen / Auto Scrolling Edit.

Pressing of "DOWN" key Rolls between "Yes" and "No".

Pressing "UP" key enters Auto scrolling / fixed screen select confirmation.

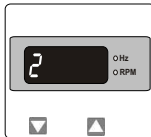


Confirmation of Auto Scrolling / Fixed Screen

Pressing "DOWN" key enter back to edit menu.

Pressing "UP" key confirms the selection and enters Number of poles selection menu.

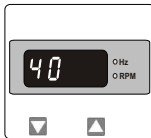
3.2.3 No. of Poles Selection :



This screen enables to set No. of poles on a Generator of which RPM is to be measured and to which the instrument is connected to measure its output parameters.

Pressing "DOWN" key enters into no. of pole edit menu.

Pressing "UP" key will set the displayed number as No. of poles. Then it will come out of set up menu.



No. of Poles edit

Pressing "DOWN" key scrolls the number from 02 to 40 in step of 2.

After 40 it wraps to the number again 02.

Pressing "UP" key enters into No. of poles Confirmation screen.

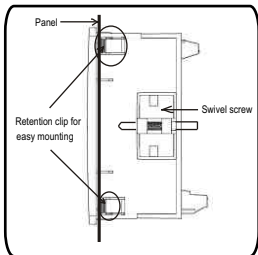


No. of Poles Confirmation

Pressing "DOWN" key enters back to No. of poles edit menu.

Pressing "UP" key sets the number on screen as number of poles of generator and exit from setup and goes to measurement screen.

4. Installation



Mounting of DPM Hz is featured with easy "Clip-in" mounting. Push the meter in panel slot (size 92 x92 mm), it will click fit into panel with the four integral retention clips on two sides of meter.

If required Additional support is provided with swivel screws (optional) as shown in figure.

The front of the enclosure conforms to IP50. Additional protection to the panel may be obtained by the use of an optional panel gasket. The terminals at the rear of the product should be protected from liquids.

The DPM Hz should be mounted in a reasonably stable ambient temperature and where the operating temperature is within the range -10°C to 55°C . Vibration should be kept to a minimum and the product should not be mounted where it will be subjected to excessive direct sunlight.

Caution:

- 1. In the interest of safety and functionality this product must be installed by a qualified engineer, abiding by any local regulations.**
- 2. Voltages dangerous to human life are present at some of the terminal connections of this unit. Ensure that all supplies are de-energised before attempting any connection or disconnection.**
- 3. These products do not have internal fuses therefore external fuses must be used to ensure safety under fault conditions.**

4.1 EMC Installation Requirements

This product has been designed to meet the certification of the EU directives when installed to a good code of practice for EMC in industrial environments.

e.g. screened output and low signal input leads or have provision for fitting RF suppression components, such as ferrite absorbers, line filters etc., in the event that RF fields cause problems.

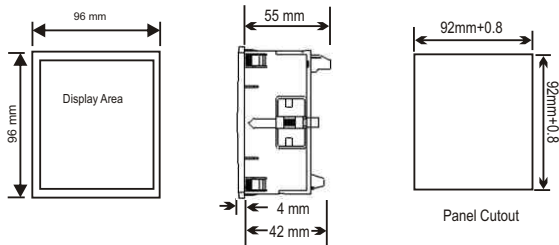
Note: It is good practice to install sensitive electronic instruments that are performing critical functions, in EMC enclosures that protect against electrical interference which could cause a disturbance in function.

Avoid routing leads alongside cables and products that are, or could be, a source of interference.

To protect the product against permanent damage, surge transients must be limited to 2kV pk. It is good EMC practice to suppress differential surges to 2kV at the source. The unit has been designed to automatically recover in the event of a high level of transients. In extreme circumstances it may be necessary to temporarily disconnect the auxiliary supply for a period of greater than 5 seconds to restore correct operation.

ESD precautions must be taken at all times when handling this product.

4.2 Case Dimension and Panel Cut Out



4.3 Wiring

Input connections are made directly to screw-type terminals with indirect wire pressure. Numbering is clearly marked on the connector. Choice of cable should meet local regulations. Terminal for Voltage input will accept upto 4mm^2 (12AWG) solid or 2.5mm^2 (12AWG) standard cable.

Note : It is recommended to use wire with lug for connection with meter.

4.4 Auxiliary Supply

DPM Hz should ideally be powered from a dedicated supply, however it may be powered from the signal source, provided the source remains within the limits of the chosen auxiliary voltage range.

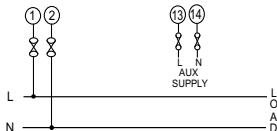
4.5 Fusing

It is recommended that all voltage lines are fitted with 1 amp HRC fuse.

4.6 Earth/Ground Connections

For safety reasons, panels and accessories should be grounded in accordance with local regulations.

5. Connection Diagrams



6. Specification :

Inputs

Nominal Input Voltage 50 VL-N - 500 VL-N
Frequency Input range 10 Hz - 500 Hz
Nominal input voltage < 0.2 VA
burden

Operating Measuring Ranges

Voltage 50 VL-N - 500 VL-N
Frequency 10 Hz - 500 Hz

Auxiliary

External Auxiliary Supply 40V to 300V AC/DC
(+/- 5%)
or
20V to 40V AC /
20V to 60V DC
Frequency Range 45 to 65 Hz
VA Burden < 3 VA

Accuracy

Frequency $\pm 0.5 \text{ Hz} \pm 1 \text{ Digit}$

Reference conditions for Accuracy :

| | |
|----------------------------|---------------------|
| Reference temperature | 23°C ± 2°C |
| Auxiliary supply voltage | Nominal Value ± 1 % |
| Auxiliary supply frequency | Nominal Value ± 1 % |

Display

| | |
|-------------|------------------------------------|
| LED | 4 digits, Display height : 14mm |
| Update rate | Approx. 1 seconds |

Controls

| | |
|----------------|--------|
| User Interface | 2 Keys |
|----------------|--------|

Applicable Standards:

| | |
|------------------------|---|
| EMC | IEC 61326 |
| Immunity | IEC 61000-4-3. 10V/m min – Level 3 industrial Low level |
| Safety | IEC 61010-1-2010 , Permanently connected use |
| IP for water & dust | IEC 60529 |
| Pollution degree: | 2 |
| Installation category: | III |

Isolation

| | |
|-------------------|---|
| High Voltage Test | 3.3 kV AC, 50 Hz for 1 minute between all Electrical circuits |
|-------------------|---|

Environmental

| | |
|-----------------------|--|
| Operating temperature | -10 to +55°C |
| Storage temperature | -20 to +65°C |
| Relative humidity | 0... 90% non condensing |
| Warm up time | Minimum 3 minute |
| Shock | 15g in 3 planes |
| Vibration | 10... 150.... 10 Hz, 0.15mm amplitude |
| Enclosure front | IP50 |
| Enclosure back | IP20 |

Enclosure

| | |
|-----------|------------------------------|
| Style | 96mm x 96mm DIN Quadratic |
| Material | Polycarbonate Housing |
| Terminals | Screw-type terminals |
| Depth | < 60 mm |
| Weight | 300 grams Approx. |

The Information contained in these installation instructions is for use only by installers trained to make electrical power installations and is intended to describe the correct method of installation for this product. However, Company has no control over the field conditions which influence product installation.

It is the user's responsibility to determine the suitability of the installation method in the user's field conditions. Company only obligations are those in Company standard Conditions of Sale for this product and in no case will Company be liable for any other incidental, indirect or consequential damages arising from the use or misuse of the products.

WARRANTY

Dear Customer,

You are now the privileged owner of **DPM**, a product that ranks the first of its kind in the world. **Company** provides 12 months warranty from the original date of Purchase against defective material and workmanship.

In the unlikely event of failure of the instrument / accessories within the warranty period, **Company** will repair meter / accessories free of charge. Please hand over the meter / accessories to the dealer / stockist from whom you have purchased along with this card and relevant Cash Memo / Invoice. This warranty entitles you to bring the meter / accessories at your cost to the nearest stockist / dealer and collect it after repairs.

NO TRANSPORTATION CHARGES WILL BE REIMBURSED.

The warranty is not valid in following cases:

1. Warranty card duly signed and stamped and original Cash Memo / Invoice is not sent along with **DPM**.
2. Complete warranty card is not presented to authorised person at the time of repairs.
3. Meter / accessories is not used as per the instructions in the instruction manual.
4. Defect caused by misuse, negligence, accidents, tampering and Acts of God.
5. Improper repairing by any person not authorised by the company.
6. Any sort of Modification, Alteration of any sort is made in electrical circuitry.
7. Seal provided inside/outside is broken.

In case of dispute to the validity of the warranty, the decision of Company service center will be final.

If you bought this **DPM** directly from the company, and if you notice transit damage, then you must obtain the insurance surveyors report and forward it to **Company**.

Thank you.

(To be filled by authorized dealer)

Model No. : _____ Serial No. : _____

Date of Purchase : _____ Cash Memo / Invoice No. : _____

Dealer's Signature : _____ Dealer's Stamp : _____