DIGITAL MULTI-FUNCTION METERS
DM36 / DM36V / DM36A USER'S GUIDE

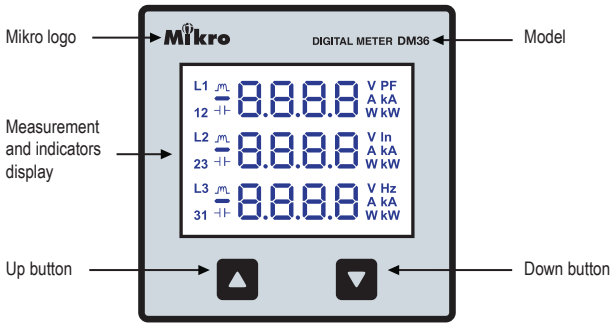

Fig 1: Meter layout

PRECAUTIONS

- Disconnect ALL power sources to the meter before performing installation, inspection and maintenance.
- Please note that incorrect installation may impair the operation or even damage the meter. There is no user serviceable part in the meter. Tampering with it may damage the meter, resulting in injury and also voiding any warranty.

DISCLAIMER

- Mikro shall not be liable for errors contained herein including any incidental and/or consequential damages arising from the use of this material.
- Mikro also reserves the right to vary the product from that described in this material without prior notice.

1. GENERAL DESCRIPTION

- DM36, DM36V and DM36A are multi-function, integrated digital meters with a large, clear LED display, complete with selection buttons.
- Measurements include voltage, current, active power, power factor & frequency.
- The meters are configurable for both single-phase and three-phase applications.
- Both DM36 and DM36V are self-powered and no auxiliary power is required.
- Using these meters, applications using multiple conventional analogue meters, indicators and selector switches may be simplified to just a single meter.

2. MODELS

	DM36	DM36V	DM36A
Phase voltage	√	√	---
Line voltage	√	√	---
Line current	√	---	√
Neutral current (Computed current)	√	---	√
Active power	√	---	---
True power factor	√	---	---
Displacement power factor	√	---	---
Total power factor	√	---	---
Frequency	√	√	√

Table 1: Model information

3. CONTENT OF BOX

Upon opening this box, you should find the following items as shown in Table 2:

Item	Description	Quantity
1	DM36 / DM36V / DM36A digital multi-function meter	1
2	Retainer clip	2
3	This user guide	1

Table 2: Packing parts list

4. DIMENSION

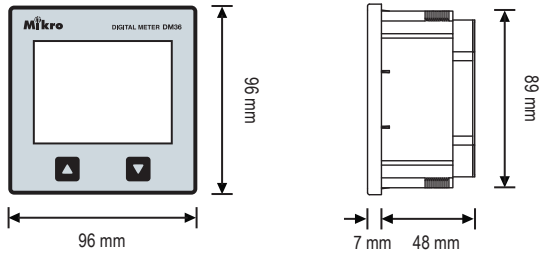

Fig 2: Dimensions of meter

5. INSTALLATION GUIDE

- Cut a square hole on the panel. The recommended hole size is 91 x 91 mm.
- Insert the meter through the pre-cut hole.
- Slide the retainer clips along any two guide slots located at the four corners of the meter until the meter is tightly secured on the panel.
- The retainer clips can be removed by lifting the tab lightly at the handle end and pulling it backward.

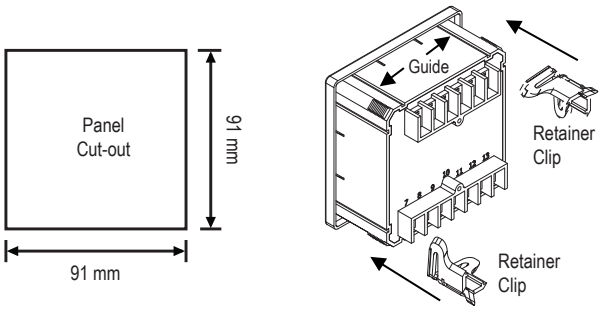

Fig 3: Recommended dimensions of the panel cut-out hole and method for retainer clip installation

6. WIRING GUIDE

- Connect the metering voltage inputs and current inputs according to the wiring schemes shown in Fig 4 ~ Fig 9.
- The recommended wire size for voltage inputs is AWG16~22.
- The recommended wire size for current inputs is AWG12~18.

NOTE:

- The polarity marks for the CT (S1 and S2) must be adhered to as shown in the respective figures.
- Please make sure the current transformer (CT) input is shunted. Under no circumstances shall the CT connection be left open-circuited. Use a CT shorting block if necessary.

6.1 DM36 CONNECTION DIAGRAM

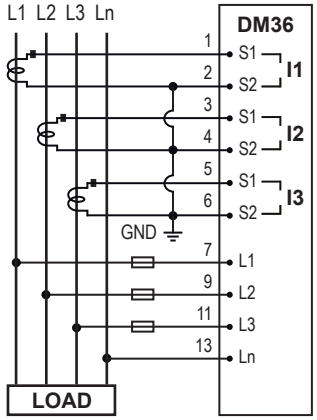

Fig 4: DM36 three-phase measurement connection diagram.

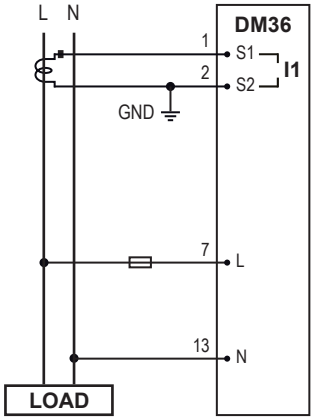

Fig 5: DM36 single-phase measurement connection diagram.

6.2 DM36V CONNECTION DIAGRAM

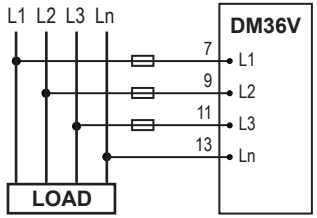

Fig 6: DM36V three-phase voltage measurement connection diagram.

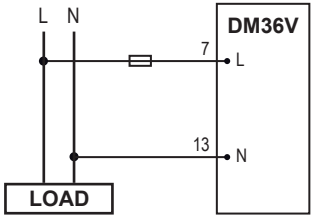

Fig 7: DM36V single-phase voltage measurement connection diagram.

6.3 DM36A CONNECTION DIAGRAM

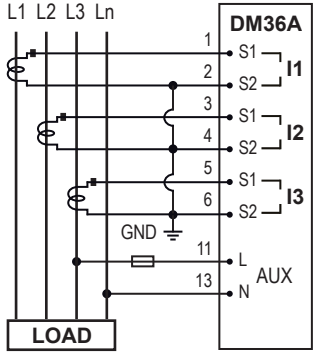

Fig 8: DM36A three-phase current measurement connection diagram.

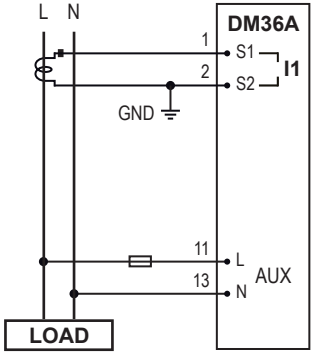

Fig 9: DM36A single-phase current measurement connection diagram.

7. POWER UP LAMP TEST

- All display segments and indicators will turn on for one second during power up.
- Note that for DM36A and DM36V, only indicators corresponding to the respective models will turn on.

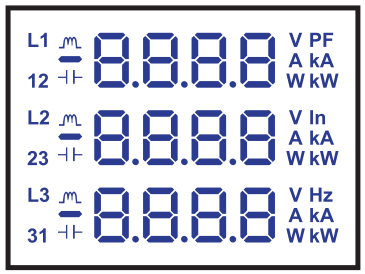

Figure 10: Display LEDs layout

8. DATA VIEWING

- The measurement and setting parameters can be viewed by stepping through the various display screens.
- Press the ▲ button once to step to the previous screen.
- Press the ▼ button once to step to the next display screen.
- Tables 3 and 4 show the list of items displayed for DM36.
- The items are displayed in the same sequence as per the tables when scrolled.

Item	Type	Description	Symbols
1	Value	Phase voltage for L1, L2 and L3	**V**
2	Value	Line voltage for L12, L23 and L31	**V**
3	Value	RMS current for L1, L2 and L3	**A / kA**
4	Value	Computed neutral current	**In**
5	Value	Power factor for L1, L2, L3 (refer to section 9.3)	**PF**
6	Value	Active power for L1, L2, L3	**W / kW**
7	Value	Generator essentials • Row 1 is total power factor for L1, L2, L3 • Row 2 is total active power for L1, L2, L3 • Row 3 is measured frequency	**PF** **W / kW** **Hz**
8	Setting	System Select (refer to section 9.1)	
9	Setting	CT Primary Current (refer to section 9.2)	
10	Setting	Power Factor Display (refer to section 9.3)	
11	Setting	Display Mode (refer to section 9.4)	

Table 3: Display for three-phase setting.

Item	Type	Description	Symbols
1	Value	Single-phase display 1 • Row 1: L1 line voltage • Row 2: L1 line current • Row 3: L1 line frequency	**V** **A / kA** **Hz**
2	Value	Single-phase display 2 • Row 1: L1 power factor • Row 2: L1 active power	**PF** **W / kW**
3~6	Setting	Same as items 8~11 in Table 3	

Table 4: Display for single-phase setting.

9. PROGRAMMING DATA

- Press the ▲ or ▼ button to step to the desired display screen.
- Press the ▲ and ▼ buttons simultaneously and hold for one second to enter the programming mode. The header display will blink to indicate the meter has entered into the programming mode.
- Press the ▲ button to increase the value of the setting data or the ▼ button to decrease the value of the setting data.
- To save the selected value and to exit the programming mode, press the ▲ and ▼ buttons simultaneously and hold for one second. The display will stop blinking and the newly set data will be displayed.
- During the programming mode, if there is no button press for 15 seconds, the meter will automatically exit the programming mode. The display will stop blinking and reset back to its initial value.

9.1 SYSTEM SELECT

- Select either single-phase or three-phase application by pressing the ▲ or ▼ button.
- Set "3P" for three-phase application and "1P" for single-phase application.
- The default setting is three-phase application.

Fig: 11: System setting

9.2 CT PRIMARY CURRENT (DM36 and DM36A)

- Set the CT primary value by pressing the ▲ or ▼ button.
- The CT secondary is fixed at 5A.
- The default value for CT primary is 5A.

Fig: 12: CT primary value setting

9.3 POWER FACTOR DISPLAY OPTION (DM36)

- Set the power factor display mode by presing the ▲ or ▼ button.
- Set "tPF" for true power factor and "dPF" for displacement power factor.
- The default mode display is true power factor.

Fig: 13: PF display

9.4 DISPLAY MODE

- There are two display modes available: rotational mode or static mode.
- In rotational mode, the display screen will automatically scroll to the next display screen every 12 seconds and rotate in a circular manner continuously. Only measurement data is shown.
- In static mode, the display screen will stay at the latest display screen permanently.
- By pressing the ▲ or ▼ button, set "YES" for rotational mode and "NO" for static mode.
- The default display setting is rotational mode.

Fig14: Display mode setting

10. PHASE VOLTAGE DISCONNECTION

- If any of the voltage measurement inputs is broken or disconnected, four dash bars will appear on the corresponding phase voltage display.

11. PHASE SEQUENCE ERROR DETECTION

- L2 and L3 indicators will blink if the voltage sequence is wrongly wired.
- This feature is disabled if any of the voltage measurement inputs is broken.

12. TECHNICAL DATA

Power Supply (DM36, DM36V)

Auxiliary supply	: Self-powered by phase voltage input
Input voltage	: 65 ~ 280 VAC

Power Supply (DM36A)

Auxiliary supply	: 65 ~ 280 VAC

Display

Display type	: White colour LED display
Display formats	: 3 rows x 4 digits per row with indicators

Measurement System

System	: Single-phase or 3-phase 4-wire system

Current Measurement (True RMS)

Measurement type	: True RMS current for L1, L2, L3 and calculated neutral current
CT primary	: 5 ~ 9999 A
CT secondary	: 5 A
Minimum current measurement	: 25 mA (CT secondary)
Accuracy	: 1.0% from 1A to 6A (secondary)
Burden	: < 0.05 VA at 5 A
Sustained overload	: 6 A

Voltage Measurement (True RMS)

Phase voltage	: 65 ~ 280 V AC
Minimum voltage measurement	: 10 V
Accuracy	: 0.5% of full scale ±1 digit

Frequency Measurement

Measurement input	: Any available voltage input
Measurement range	: 45.0 ~ 65.0 Hz
Accuracy	: 0.5%

Active Power Measurement

Measurement type	: Instantaneous active power
Accuracy	: 1.0%

Power Factor Measurement

Measurement type	: True power factor and displacement power factor
Accuracy	: 1.0 degree from ±0.50 to 1.00 PF

Mechanical

Approximate weight	: 0.26 kg
Dimension (mm)	: 96(w) x 96(h) x 55(d)
Mounting	: Panel mount
Panel cut-out	: 91 x 91 mm flush mounted
Enclosure protection	: IP54 at the front panel, IP50 at the back body

Environmental Conditions

Overvoltage category	: CAT III
Operating temperature	: -10 to 55 °C
Storage temperature	: -20 to 70 °C
Humidity rating	: 5% to 95% RH non-condensing

Test Standards

IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11, IEC 61326-1, CISPR 11, IEC 60255-27

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