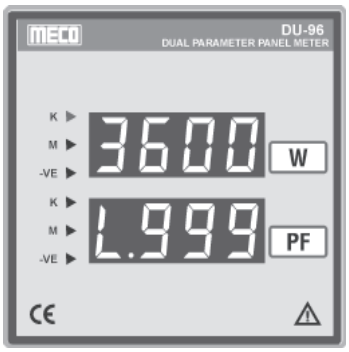
DUAL PARAMETER METER
For W, VAR, VA & PF
MODEL : DU-96



User Manual

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Introduction

DU96 3 phase 3 element 4 Wire Meter is microcontroller based electrical analyzer indicating TRMS value of electrical parameters. It is a available with two parameters amongst W-VA-VAR-PF in six different combination. It has 2 rows of LED display of 4 digit each.

It has factory set function such as CT Ratio, PT Ratio it should be mentioned in ordering information.

Safety Recomendations

To guarantee the level of safety incorporated in the device, follow the instructions below :

1) Adhere strictly to the connection diagrams for the installation of the instrument.
2) Before gaining access to the terminal, ensure that the conductors to be connected to the instrument are not live.
3) Make sure that the electrical panel in which the instrument is to be placed is designed in such a way as to guarantee that the terminals are inaccessible after installation.

Technical Specifications

Display	:	2 groups of 4 digit LED display height 14.2mm / 0.56”
Measuring Interval	:	0.5 sec
Operating Temp.,	:	0°C to 50°C
Humidity	:	<90% RH. (Non Condensing)
Dimension (mm)	:	Front 96 x 96 mm Depth 90 mm Panel Cutout 92 x 92 mm
Weight	:	490 gms.

Electrical Specifications

System	:	3 Phase 3 Element 4 Wire
Auxiliary Power Supply :		
Nominal (Range)	:	230V AC (185~264VAC) 110V AC (90~126VAC) optional
Frequency	:	50Hz
Burden	:	< 5 VA
Voltage Input	:	
Nominal	:	230V / 240V AC (Phase - Neutral)
Measurement		400V / 440V AC (Phase - Phase)
Max. Range	:	300V AC (Phase - Neutral) 520V AC (Phase - Phase)

Burden	:	< 0.1 VA / Phase
Accuracy Range	:	50 ~ 300V (max.) Phase to Neutral
PT Ratio	:	Use PT for higher input ranges. PT Ratio Fully Programmable (1.000 ~ 9999) (factory set)
Current Input	:	
Nominal Measurement	:	5A AC (internally isolated) 1A AC (against specific order)
Max. Range	:	0 ~ 6VAC
Burden	:	< 0.5VA / Phase
Max. Overload Current	:	200% for 1 sec. (10A max.)
Accuracy Range	:	20 ~ 120%
CT Ratio	:	Use CT for Measurements above 5 Amps. Fully Programmable (1.000 ~ 9999) (factory set)
Accuracy :		
Active Power *	:	± 0.5% of Full Scale + 5 dgt
Reactive Power *	:	± 0.5% of Full Scale + 5 dgt
Apparent Power *	:	± 0.5% of Full Scale + 5 dgt
Power Factor	:	± 1° Electrical

** **Note :** Watt, VAR, VA Accuracy at Power factor 0.3 Lag - Unity - 0.3 Lead*

Processing method

a) Phase Values :

Effective phase voltage

$$V_n\ (TRMS) = \sqrt{\frac{\sum_{i=1}^{N} [V_n\ (i)]^2}{N}}$$

Effective phase current

$$I_n\ (TRMS) = \sqrt{\frac{\sum_{i=1}^{N} [\ I_n\ (i)]^2}{N}}$$

Active phase power

$$P_n = \frac{\sum_{i=1}^{N} V_n\ (i) I_n (i)}{N}$$

Apparent phase power

$$S_n = V_n(TRMS) \times I_n(TRMS)$$

Reactive phase power

$$Q_n = \sqrt{S_n^2 - P_n^2}$$

Phase power Factor

$$PF_n = \frac{P_n}{S_n}$$

b) Equivalent system Values :

Equivalent system voltage $V_T = \frac{V_1 + V_2 + V_3}{\sqrt{3}}$

Equivalent system current $I_T = \frac{I_1 + I_2 + I_3}{\sqrt{3}}$

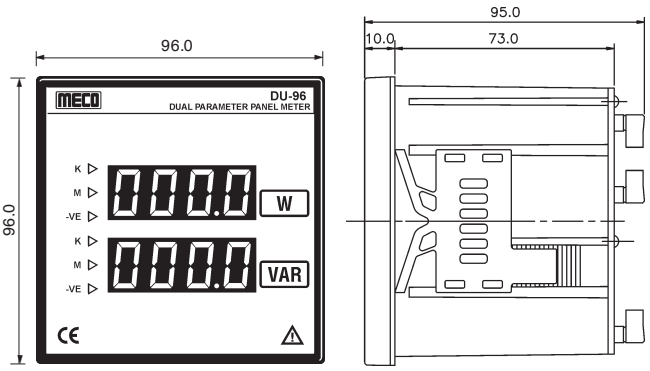
System active power $P_T = P_1 + P_2 + P_3$

System reactive power $Q_T = Q_1 + Q_2 + Q_3$

System apparent power $S_T = S_1 + S_2 + S_3$

Equivalent system power factor $PF_T = \frac{P_T}{S_T}$

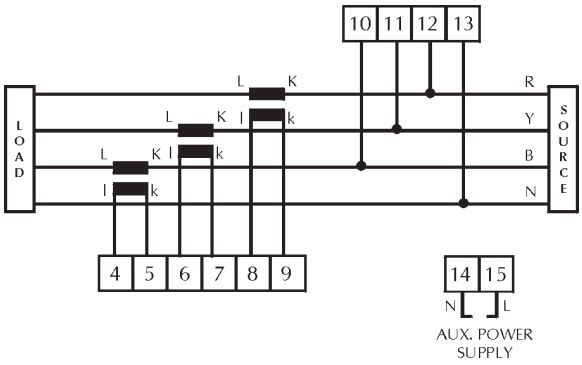
Mechanical Diamensions
Model : DU-96



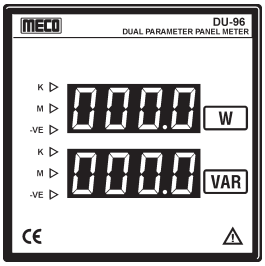
Front View Side View

Connection Diagrams

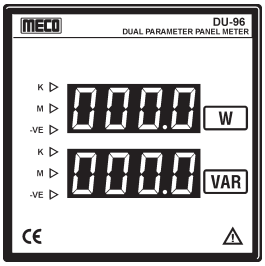
3 Phase 3 Element 4 Wire



Display Indication



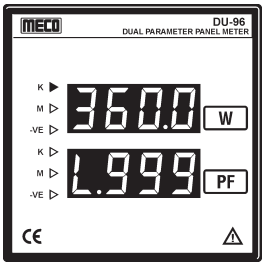
1) Numerical Field Zone
This consists of two rows of four digits each. All Pararmeters are system parameters. This consist of two parameters.
a) Active Power (Watts)
b) Reactive Power (Var)
c) Apparent Power (VA)
d) Power Factor (PF)
In six different combination.



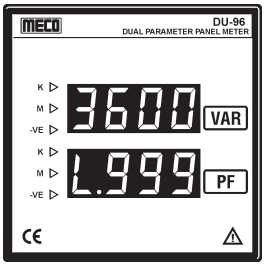
2) Customised Symbol Zone
This zone backs up the numerical indications. This consist of six LED three for each parameter as shown scale below.
K ▶ = Kilo
M ▶ = Mega
-VE ▶ = Export Power
Note : For higher CT ratio / PT ratio power will be scaled accordingly.

Model Description

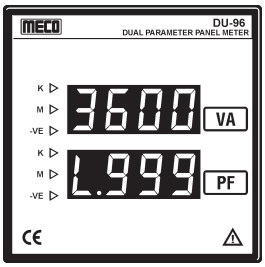
(3 Phase 4 Wire System 240V / 5A & Phase angle 0^0)



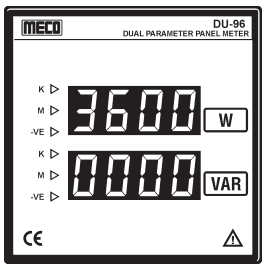
1) Model : DU96 (W+PF)
This indicates system active power & system PF with Lag & Lead indication.



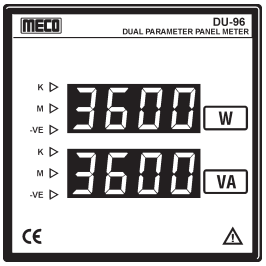
2) Model : DU96 (VAR+PF)
This indicates system reactive power at phase angle 90^0 & system PF with Lag & Lead indication.



3) Model : DU96 (VA+PF)
This indicates system apparent power & system PF with Lag & Lead indication.

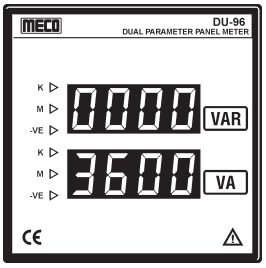


4) Model : DU96 (W+VAR)
This indicates system active power at Phase angle 0^0 system reactive power at Phase angle 90^0



5) Model : DU96 (W+VA)

This indicates system active power & system apparent power.



6) Model : DU96 (VAR+VA)

This indicates system reactive power at Phase angle 90^0 & system apparent power Phase angle 0^0 & 90^0

NOTE

NOTE

MECO®

CERTIFICATE OF CALIBRATION

We hereby certify that this product has been calibrated and found to be in accordance with the applicable SPECIFICATIONS and MECO STANDARDS.

Accuracies of the standard equipment used in this calibration are traceable to the National Standards.

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SR. NO : _____

CHECKED BY : _____

DATE : _____

MODEL NO : _____