



## Programmable Digital AC Meter Installation & Operating Instructions

Model 262-DGU-1A / 1V  
Model 262-DGU-3A / 3V  
Model 244-DGU-1A / 1V  
Model 244-DGU-3A / 3V



Size: 48 x 96mm



Size: 96 x 96mm

# Crompton DGU - AC Digital Panel Meter

## PROGRAMMABLE DPM V/A

AC Volt Meter (3 $\Phi$ ) : DGU - 3V

AC Ammeter (3 $\Phi$ ) : DGU - 3A

AC Volt Meter (1 $\Phi$ ) : DGU - 1V

AC Ammeter (1 $\Phi$ ) : DGU - 1A

## Installation & Operating Instructions

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## Available Models :

### 1.DGU-3V



### 2.DGU-3A



### 3.DGU-1V



### 4.DGU-1A

### 5. 1



2

1

## 1. Introduction

The DGU Series is a panel mounted 96 x 96mm & 48 x 96mm Digital Panel Meter for the measurement of AC Voltage and current in three phase or single phase systems.

The instrument integrates accurate measurement technology.

The parameters are displayed with Ultra high brightness LED

display with 14mm Digit height which enables to take

readings from long distance. Programmable DPM can be

configured and Programmed at site for the following :

PT Primary, CT Primary, PT Secondary, CT Secondary. The front

panel has two push buttons for the user to interface to scroll

through the available parameters the two keys has function as

follows:

1.  :Scrolls through parameter in upward sequence. Display sequence DGU 3V : L1 voltage,L2 voltage, L3 voltage, L1-L2 voltage, L2-L3 voltage, L3-L1 Voltage, System voltage and back to L1 voltage. Display sequence DGU 3A : L1 current, L2 current L3 current, System current and back to L1 current.

2.  :Scrolls the parameters in Reverse of above sequence.

**TABLE 1: Parameters Displayed with DGU 3V model**

Measured Parameters	Unit of measurement
L1 Voltage	volt
L2 Voltage	volt
L3 Voltage	volt
L1-L2 Voltage	volt
L2-L3 Voltage	volt
L3-L1 Voltage	volt
System Voltage	volt

**TABLE 2: Parameters Displayed with DGU 3A models**

Measured Parameters	Unit of measurement
L1 Current	Ampere
L2 Current	Ampere
L3 Current	Ampere
System Current	Ampere

**TABLE 3: Parameters Displayed with DGU 1V model**

Measured Parameters	Unit of measurement
L1 Voltage	volt

**TABLE 4: Parameters Displayed with DGU 1A models**

Measured Parameters	Unit of measurement
L1 Current	Ampere

## 2 . Measurement Reading Screen

In normal operation the user is presented with the measurement reading screens. These screens may be scrolled through one at a time in incremental order by pressing the  key and in decrementing order by pressing  key.

## A. Display Screens of DGU 3V Models :

Screen 1 : Voltage L1



Screen 2 : System Voltage  
(value displayed after "Sys" flashing on Display)



## B. Screens of DGU 3A Models :

Screen 1 : L1 Current



Screen 2 : System Current  
(Value displayed after "Sys" flashing on Display)



## C. Display Screens of DGU 1V/1A Models :



## 3. Programming

The following sections comprise step by step procedures for configuring the DGU 3V/3A and DGU 1V/1A for individual user requirements. To access the set-up screens press and hold the “ $\uparrow$ ” and “ $\downarrow$ ” Keys Simultaneously.

This will take the User into the Sys Type Screen (in case of 3V/3A) Followed by “Sys” on Display (Section 3.1) or directly into the CT/PT Primary Screen (in case of A / V respectively) .

### 3.1 Set Up Screens

#### 3.1.1. System type(for DGU 3V/3A)



This screen is used to set the system type. System type “3” for 3 phase 3 wire & “4” for 3 phase 4 wire system.

Pressing the “ $\downarrow$ ” down” key accepts the present value and advances to the “PT primary (in case of 3V) or CT primary (in case of 3A) value Edit” menu (see section 3.1.2 for PT primary and 3.1.3. for CT primary). Pressing the “ $\uparrow$ ”up” key will enter to the system type selection menu and scroll the values through will enter values available. Pressing the “ $\downarrow$ ”down” key advances to the system type confirmation menu.

**Note:** In Case 3P3W accuracy of I2 is 2% and Sys current is 1%.

## System Type Confirmation



This screen will only appear following the edit of system type. If system type is to be edit again, Pressing the “ $\uparrow$  up” key will scroll between “3” for 3 phase 3 Wire and “4” for 3 Phase 4 Wire.

Pressing the “ $\downarrow$  down” key sets the displayed value and will advance to “Potential Transformer Primary Value Edit” menu. (See section 3.1.2 for 3V & 1V) and “Current transformer primary value (see section 3.1.3 for 3A & 1A)

### 3.1.2. Potential Transformer Primary Value (for 3V & 1V)

This screen displays “PtPr” message followed by previously set PT primary value on display. For DGU 3V (3 phase) user can set PT primary value from **100V<sub>LL</sub> to 999kV<sub>LL</sub>** & for DGU 1V (single phase), user can set PT primary from **57.5(V<sub>LN</sub>) to 999 (kV<sub>LN</sub>)**.



Pressing the “ $\downarrow$ ” key accepts the present value and advances to the “PT Secondary” selection menu(See Section 3.1.4) for DGU -3V and 1V.

Pressing the “ $\uparrow$ ” key will enter the “Potential transformer Primary Value Multiplier Selection.

**DGU 3V:** Initially the “multiplier must be selected. Pressing the “ $\uparrow$ ” Key will move the decimal point position to the right side and show **###.**, after which it will again Shift to **###.###**, **###.** with Annunciation of “x1000”, which indicates the value in kV.

**DGU -1V:** Initially the “multiplier must be selected. Pressing the “ $\uparrow$ ” Key will move the decimal point position to the right Side and show **##.##**, **###.##** after which it will again shift to **####**, **####.** With annunciation of “x1000”, which indicates the value in kV. Pressing the “ $\downarrow$ ” key accepts the present multiplier (Decimal Point position) and advances to the “PT Primary value Edit” menu with decimal flashing to indicate cursor position.

### PT Primary value Edit

Pressing the “ $\uparrow$ ” key will scroll the value of the most significant digit.

Pressing the “ $\downarrow$ ” key accepts the present value at the cursor position and advances the cursor to the next Less significant digit. When the least significant digit has been set,



pressing the “↓” key will advance to the “Potential transformer Primary Value Confirmation” screen. For **DGU 3V**: When PT primary is set < 100VLL then meter shows “Err” & again goes to PT primary edit stage with the minimum PT primary value i.e. 100VLL  
**DGU -1V**: When PT primary is set less than 57.5 VLN then meter shows “Err” & again goes to PT primary edit stage with the minimum PT primary value i.e. 57.5VLN.

**Note** : the flashing decimal point indicates the cursor position, a steady decimal point will be present to identify the scaling of the number until the cursor position coincides with the steady decimal point position. At this stage the decimal point will be flashing.



### Potential Transformer Primary Value Confirmation

This screen will only appear following an edit of the Potential Transformer Primary Value. If the set value is to be corrected, pressing the “↑” key will return to the “Potential Transformer Primary Value Edit” stage. Pressing the “↓” key sets the value and then advance to the “PT secondary screen” Selection menu.

**Note**: For DGU 1V(600VLN ) it will exit from set up menu.

### 3.1.3 Current Transformer Primary Value (for DGU 3A & 1A)

This screen displays “CtPr” message followed by previously set CT primary value on display. This screen enables user to set CT primary from **1A to 999kA**.



Pressing the “↓” key accepts the present value and advances to the “CT Secondary Selection screen”

Pressing the “↑” key will shift decimal point position to right side and show ###,###,###. , after which it will again shift to #.###,###,###. with Annunciation of “x1000”, It indicates the value in kA.

Pressing the “↓” key accepts the decimal point position and enters into Current Transformer Primary value edit.



### Current Transformer Primary value Edit

Pressing the "↑" key will scroll the value of the most significant digit. Pressing the "↓" key accepts the present value at the cursor position and advances the cursor to the next Less significant digit. When the least significant digit has been set, pressing the "↓" key will advance to the "Current transformer Primary Value confirmation" screen. When CT primary is set less than 1A then meter shows "Err" and CT primary is set to 1A.

minimum CT primary value that user can set is 1A.

**Note :** the flashing decimal point indicates the cursor position, a steady decimal point will be present to identify the scaling of the number until the cursor position coincides with the steady decimal point position. At this stage the decimal point will be flashing.



### Current Transformer Primary Value Confirmation

This screen will only appear following an edit of the Current Transformer Primary Value.

If the set value is to be corrected, pressing the "↑" key will return to the "Current Transformer Primary Value Edit" stage. Pressing the "↓" key sets the value and then advance to the "CT secondary" Selection menu.

### 3.1.4. Potential Transformer Secondary Value (for 3V & 1V)

This screen displays "Pt-S" message followed by previously set PT secondary value on display. For DGU 3V (3 phase) user can set PT secondary value from **100V<sub>LL</sub> to 500V<sub>LL</sub>** & for DGU 1V (single phase), user can set PT primary from **57.5(V<sub>LN</sub>) to 300V<sub>LN</sub>**.



Pressing the "↓" key accepts the present value and advances to the "Auto scroll" selection menu (See Section 3.1.6) for 3V. In case of DGU 1V it will exit from set up menu.

Pressing the "↑" key will enter the "Potential transformer Secondary Value Most significant digit Selection."

Pressing the "↑" key will scroll the value of the most significant digit. Pressing the "↓" key accepts the present value at the cursor position and advances the cursor to the next Less significant digit.

When the least significant digit has been set, pressing the "↓" key will advance to the "Potential transformer secondary value confirmation" screen. For DGU 3V minimum PT secondary can set is 100V(L-L). For DGU 1V If Pt secondary is less than 57.5 V(L-N) then meter shows "Err" and PT secondary is set to 57.5 V(L-N).



**Note: For DGU 1V decimal point is fixed at third digit position.**

### Potential Transformer Secondary Value Confirmation

This screen will only appear following an edit of the Potential Transformer Secondary Value.

If the set value is to be corrected, pressing the "↑" key will return to the "Potential Transformer Secondary Value Edit" stage. Pressing the "↓" key sets the value and then advance to the "Auto scroll" Selection menu in case of DGU -3V and in case of DGU -1V it will exit from set up menu.

### 3.1.5 Current Transformer Secondary Value (for 3A & A)



This screen is used to set Current transformer secondary value. "1" for CT secondary 1A and "5" for CT secondary 5A. pressing "↓" down key accepts the present value and advances to the Auto Scroll option in case of DGU -3A and for DGU -1A it will exit from setup and goes to measurement screen.



### Current transformer Secondary confirmation screen:

When "↓" down key is pressed , set message screen will appear, if again down key is pressed value is accepted.

If CT secondary value is to be edit once again,pressing "↑" up key user can scroll between "5" for CT secondary 5A and "1" for CT secondary 1A.

Pressing "↓" key will accept displayed value and advance to auto scroll selection menu in case of DGU 3A and it will exit from set up in case of DGU 1A and goes to measurement screen.

### 3.1.6 Selection of Auto Scrolling or fixed Screen (only for 3V/3A)



Pressing the "↓" key will accept the display value and exit from set up and enter into measurement mode.

Pressing the "↑" key will scroll between "Yes" and "No".

Select "Yes" for Auto scrolling of parameter display and Select "No" for fixed display screen.

Pressing the "↓" key will enter into Screen selection Confirmation screen.



### Auto / Fixed Screen Confirmation

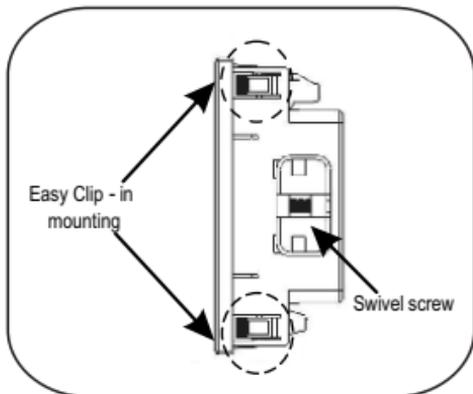
Pressing the "↓" key set the selected option and Exit set up with entering into measurement mode.

Pressing the "↑" key re-enter Screen selection menu.

## 4. Installation

Mounting of DGU 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.



As the front of the enclosure conforms to IP 54 with the use of the supplied panel gasket. The terminals at the rear of the product should be protected from liquids.

The DGU V/A should be mounted in a reasonably stable ambient temperature and where the operating temperature is within the range 0 to 50 °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 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.

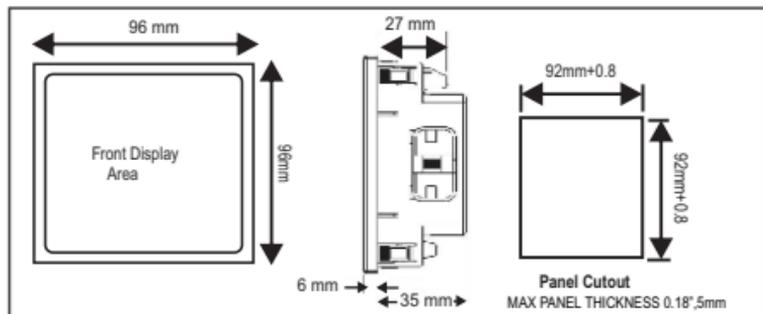
1. Screened output and low signal input leads or have provision for fitting RF suppression components, such as ferrite absorbers, line filters etc., in the event that RF fields cause problems.

**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.

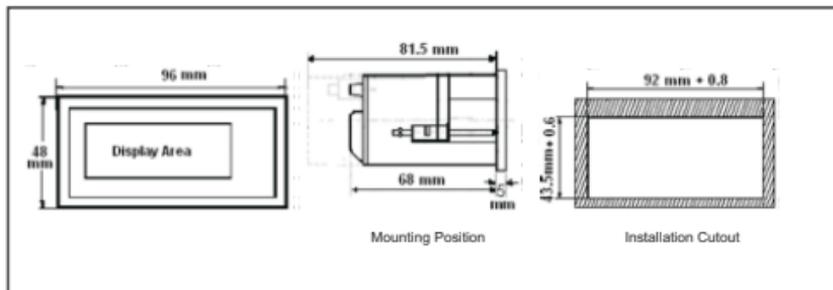
2. Avoid routing leads alongside cables and products that are, or could be, a source of interference.
3. To protect the product against permanent damage, surge transients must be limited to 2kV pk. It is good EMC practice to suppress differential surges to 2kV at the source. The unit has been designed 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.
4. ESD precautions must be taken at all times when handling this product.

## 4.2 Case Dimensions and Panel Cut Out

### 4.2.1 for 96X96 models



## 4.2.2 for 48 X 96 models



## 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 inputs will accept up to 4mm<sup>2</sup>(12 AWG) or 2.5mm<sup>2</sup> (12AWG)Standard

**Note :** 1) It is recommended to use wire with lug for connection with meter.

- 2) For disconnecting the device a switch or circuit-breaker shall be included at the site and shall be within easy reach of the operator. The specification are as below.  
For aux. = At least 1.5 times of applied Power supply.  
For Measuring Input = At least 1.5 times of applied measuring inputs.

## 4.4 Auxiliary Supply

DGU 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.

## 4.5 Fusing

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

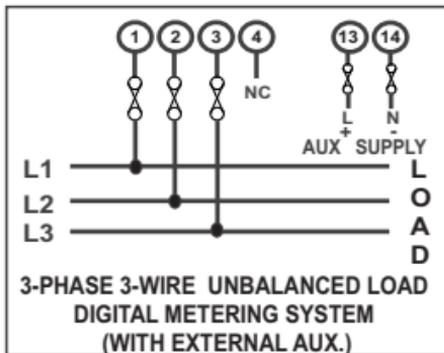
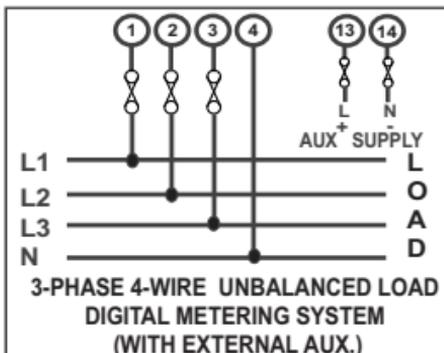
## 4.6 Earth/Ground Connections

For safety reasons, panels and accessories should be grounded in accordance

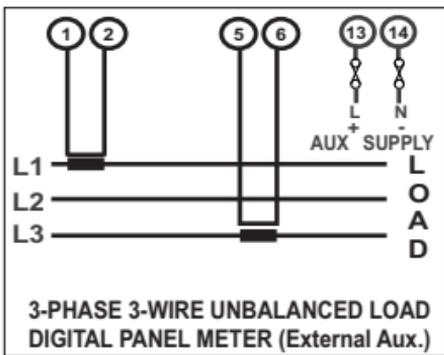
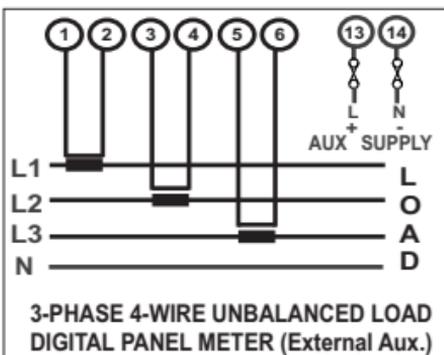
## 5. Connection Diagrams

### 5.1 For 96x96 DPM

Connections for DGU 3V 96 x 96mm

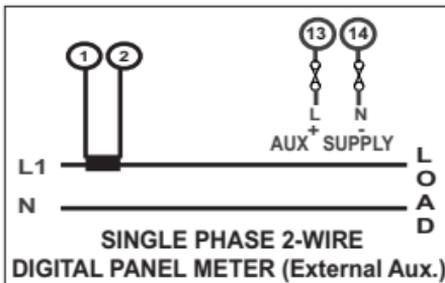
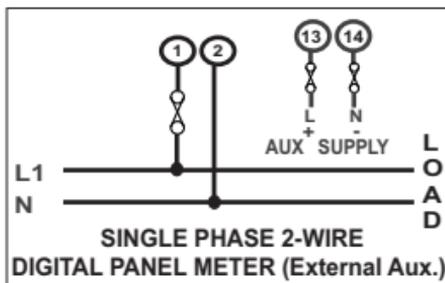


Connections for DGU 3A 96X96



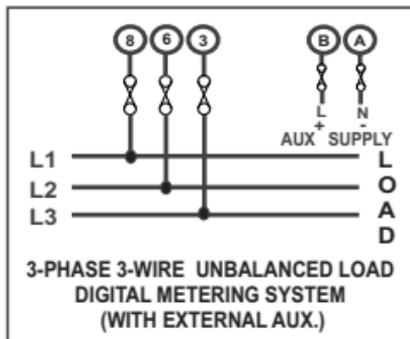
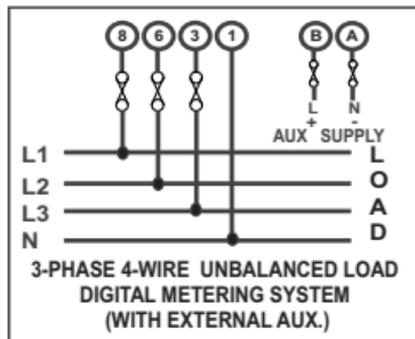
## Connections For DGU 1V 96X96

## Connections For DGU 1A 96X96

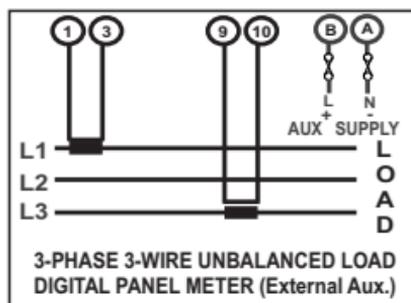
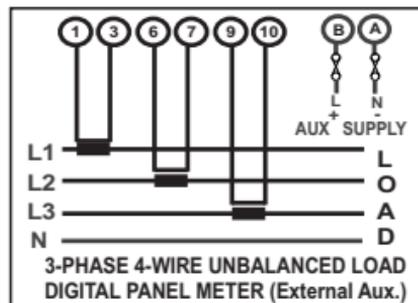


## 5.2 For 48x96 DPM

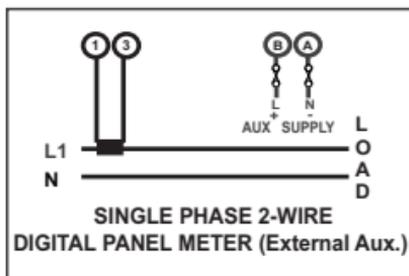
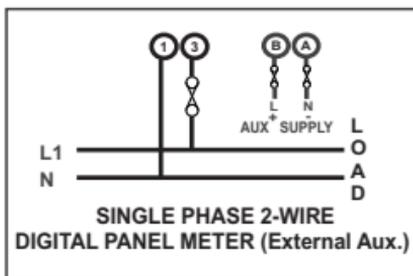
### Connections for DGU 3V 48 x 96mm



## Connections for DGU 3A 48 x 96mm



## Connections For DGU 1V 48 x 96mm Connections For DGU 1A 48 x 96mm



## Operating Measuring Ranges

Voltage Range	10 ... 120 % of Rated Value
Current Range	10 ... 120 % of Rated Value (optional 150%)
Frequency	45 ... 65 Hz

## Reference conditions for Accuracy :

Reference temperature	23 °C $\pm$ 2 °C
Input waveform	Sinusoidal (distortion factor 0.005)
Auxiliary supply voltage	Rated Value $\pm$ 1 %
Auxiliary supply frequency	Rated Value $\pm$ 1 %
Input Frequency	50 Hz / 60 Hz
Voltage Range	20...100% of Nominal Value
Current Range	10...100% of Nominal Value

## Accuracy

Voltage (3V / 1V)	$\pm$ 0.5% of Nominal value.
Current (3A / 1A)	$\pm$ 0.5% of Nominal value.

Measurement error is normally much less than errors specified in the above. Variation due to influence quantity is less than twice the error allowed for reference condition.

## Temperature Coefficient

Voltage	0.025% / °C
Current	0.05% / °C

(For Rated value range of use 0... 50 °C )

## Display

LED	1 line 4 digits .
Digit height	14mm

## 6. Specifications :

### Input voltage (3V /1V) :

Nominal Input Voltage Ranges

Line - Neutral	Line - Line
57 V - 300 V L-N	100 V - 500V L-L
600 V L-N (Applicable for single phase only)	

Max continuous input voltage

120% of rated value

Nominal input voltage burden

<0.3VA approx. per phase

<0.4 VA approx. per phase (for 600VLN)

System PT Primary values

**3 V:** 100VL-L to 999kV L-L Programmable onsite

**V:** 57.5VL-N to 999kV L-N Programmable onsite

### Input current (3A / 1A) :

Nominal Input Current Ranges

1A and 5A AC RMS

System CT Primary values

1A to 999kA Programmable onsite

Max continuous input current

120% of rated value (Optional 150% of rated value)

Nominal input current burden

<0.2VA approx. per phase

### Overload Indication :

"-oL-"

(If input is greater than 125% of secondary value.)

(optional 155% of secondary for current input)

### Auxiliary Supply :

AC-DC Auxiliary Supply

40V to 300V AC/DC (+/- 5%)

20V to 40V AC /20V to 60V DC

Frequency Range for AC Aux. Supply

45 to 65 Hz

VA Burden

<3 VA at 240V ,50Hz .

### Overload Withstand :

Voltage

2 X Rated Value for 1 Second, repeated  
10 times at 10 second interval.

Current

4 X Rated Value for 1 Second, repeated  
5 times at 5 min interval.

## Applicable Standards

EMC

IEC 61326-1:2005

10V/m min-Level 3 industrial low level  
Electromagnetic radiation environment

Safety

IEC 61010-1: 2001,Permantly Connected use

IP for water & dust

IEC 60529

## Safety

Pollution Degree

2

Installation Category

III

High Voltage Test

2.2 kV AC, 50 Hz for 1 minute

## Environmental conditions

Operating temperature

0 to 50 °C

Storage temperature

-25 to 70 °C

Relative humidity

0 .. 90 % (Non condensing)

Warm up time

Minimum 3 minute

Shock

15g in 3 planes

Vibration

10 .. 55 Hz, 0.15mm amplitude

## Enclosure

Front

IP54

Back

IP20

Material

Polycarbonate Housing

Terminals

Screw-type terminals

## Dimension and weight:

	<b>96x96 models</b>	<b>48x96 models</b>
Bezel Size (DIN 43718)	96mm X 96mm (DIN 43718 )	48mm X 96mm
Panel Cut-Out	92 + 0.8mm X 92 + 0.8mm	43.5 + 0.6mm X 92 + 0.8mm
Overall Depth	40mm	68mm
Weight	310g Approx.	250g Approx.

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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, Manufacturer has no control over the field condition which influence product installation.

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

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