

# DIGITAL MULTIMETER

## EPM-03 / EPM-04 / EPM-05 / EPM-06

### GENERAL:

EPM-0X Series Multimeters are designed for measuring electrical parameters in 3-phase networks :

3-phase	A	V	Hz	Max.Demand	Max/Min Voltages	cosφ
EPM-03	●					
EPM-04	●	●		●	●	
EPM-05	●	●	●	●	●	
EPM-06	●	●	●	●	●	●

### EPM-03 Digital Ammeter:

It measures AC RMS current. Measuring range is between 0– 5A. Current transformers (1-10000/5A) are necessary for higher AC current inputs.

### EPM-04 Digital Multimeter; Maximum Demand, Maximum and Minimum Voltages

EPM-04 is a multimeter which measures :

- 3 phase currents ( $I_{L1}$ ,  $I_{L2}$ ,  $I_{L3}$ ) ,
- AC RMS values of 6 different line voltages ( $V_{L1-N}$ ,  $V_{L2-N}$ ,  $V_{L3-N}$ ,  $V_{L1-L2}$ ,  $V_{L2-L3}$ ,  $V_{L3-L1}$ ),
- Maximum demand values in adjustable periods,
- Maximum and minimum voltages

### EPM-05 Digital Multimeter with Frequency; Maximum Demand, Maximum and Minimum Voltages

EPM-05 is a multimeter which measures :

- 3 phase currents ( $I_{L1}$ ,  $I_{L2}$ ,  $I_{L3}$ ) ,
- AC RMS values of 6 different line voltages ( $V_{L1-N}$ ,  $V_{L2-N}$ ,  $V_{L3-N}$ ,  $V_{L1-L2}$ ,  $V_{L2-L3}$ ,  $V_{L3-L1}$ ),
- Frequency
- Maximum demand values in adjustable periods,
- Maximum and minimum voltages

### EPM-06 Digital Multimeter with Frequency, Cosφ, Maximum Demand, Maximum and Minimum Voltages :

EPM-06 is a multimeter that measures :

- 3 phase currents ( $I_{L1}$ ,  $I_{L2}$ ,  $I_{L3}$ ),
- AC RMS voltage values
- ( $V_{L1-N}$ ,  $V_{L2-N}$ ,  $V_{L3-N}$ ,  $V_{L1-L2}$ ,  $V_{L2-L3}$ ,  $V_{L3-L1}$ ),
- Frequency,
- Cosφ of each phase and the average of 3 phases,
- Maximum demand values in adjustable periods,
- Maximum and minimum voltages

EPM-06 has 5 displays 3 displays for currents, 1display for voltages, for cosφ and frequency.

### FUNCTIONS:

#### 1- Frequency-meter function

#### 2- Maximum Demand Function

EPM-04, EPM-05 and EPM-06 monitor demand and maximum demand values. *Demand* value is defined as the moving average RMS value measured in demand time.

*Maximum Demand* value is the maximum value of the average RMS values recorded during demand time. EPM-04, EPM-05 and EPM-06 record this maximum value in memory and keep continuously measuring maximum demand as defined, comparing it with the last recorded value. If it is bigger than the last recorded value, it replaces last one in memory. *Demand* value stored is in each 2 minutes.

#### 3- Cosφ function

As a cosφ meter, the EPM-06 measures separately the cosφ value of the each phase and the average cosφ value. These values are displayed by scrolling UP and DOWN keys. However to display the related average cosφ value,  $V_{L1-L2}$  or  $V_{L2-L3}$  must be selected.

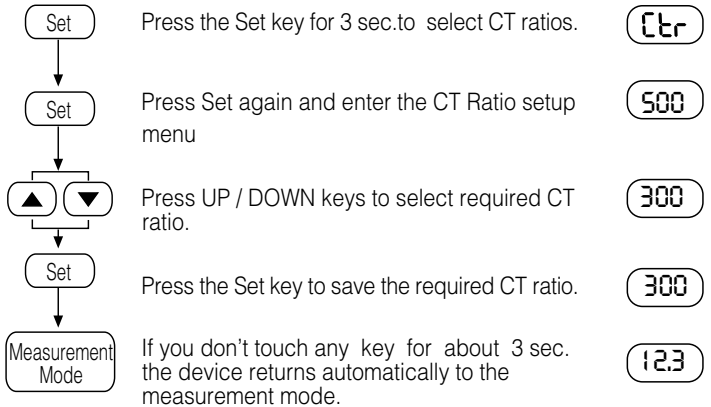
#### 4- Maximum & Minimum Voltages Function

For Maximum and Minimum Voltages Function; EPM-04, EPM-05 and EPM-06 stores, the maximum and minimum phase-neutral and phase-phase voltages except 0V, in memory.

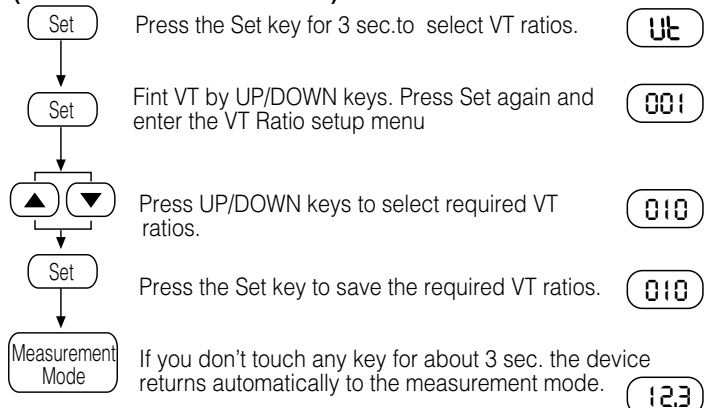
#### In all the serie devices:

- Flush mounting form suitable for panel installations.
- Connections are made through terminals.
- When the current transformer ratio is set over 1000/5A, the “k” “kiloampere” light is activated
- Power supply is provided by auxiliary wiring, with a phase-neutral connection with fuse protection.

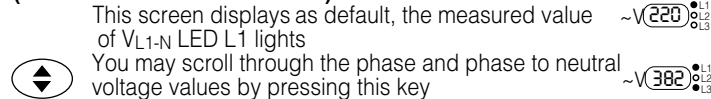
### Current Transformer Ratio Setup: ( for EPM-03 / EPM-04 / EPM-05 / EPM-06)



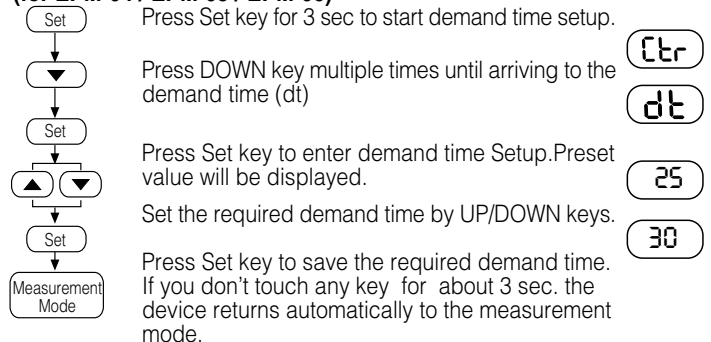
### Voltage Transformer (VT) Ratio Setup: ( for EPM-04 / EPM-05 / EPM-06)



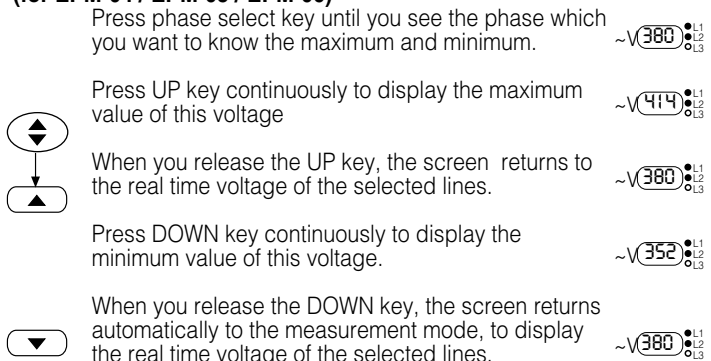
### Displaying the Phase-Neutral and Phase-Phase voltages: (for EPM-04 / EPM-05 / EPM-06)



### Demand Time Setup: (for EPM-04 / EPM-05 / EPM-06)



### Displaying the Maximum and Minimum Voltages: (for EPM-04 / EPM-05 / EPM-06)



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## EPM-03 / EPM-04 / EPM-05 / EPM-06

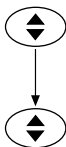
### To Reset the Maximum and Minimum Voltage and Maximum Demand Values of the Measured Voltages: (for EPM-04 / EPM-05 / EPM-06)

Press UP and DOWN keys simultaneously. EPM-05 and EPM-06 resets the maximum - minimum voltages and maximum demand values. Then device returns to the measurement mode within 3 seconds automatically.



### To Display the Frequency: (for EPM-05 / EPM-06)

Press the Phase Select key multiple times until arriving to the voltage, e.g. VL3-L1. At the voltage VL3-L1, the lowest display reverts to show the frequency of L3-L1 phase-phase voltage and Hz indicator lights.



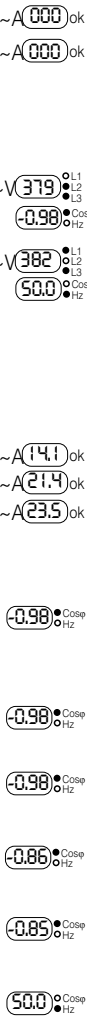
### To Display Demands: (for EPM-04 / EPM-05 / EPM-06)

Press UP key to display maximum demands of each phase on the top 3 displays titled ~A. Press DOWN key to display demand values. **Note:** When the key is released, the current displays revert to display the actual currents of the lines.

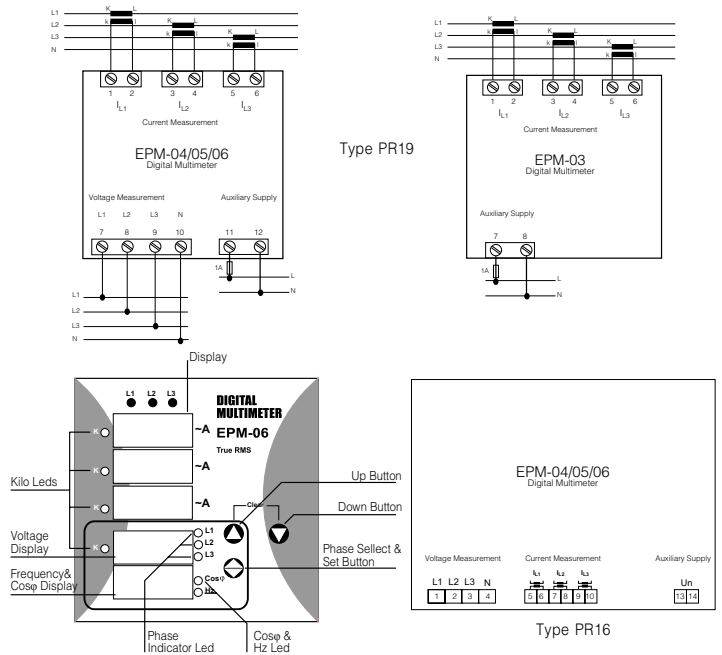


### To Display the Cosφ and frequency values:

Using the phase select key, when voltage is at L1, the cosφ LED lights and the cosφ of VL1-N is displayed. Using the phase select key, when voltage is at L2, the cosφ LED lights and the cosφ of VL2-N is displayed. Using the phase select key, when voltage is at L3, the cosφ LED lights and the cosφ of VL3-N is displayed. Using the phase select key, when voltage is at L1-L2, cosφ LED lights and the average cosφ is displayed. Using the phase select key, when voltage is at L2-L3, cosφ LED lights and the average cosφ is displayed.



### Connecting Diagram



### Technical data

Operating Voltage (U <sub>n</sub> )*	Operating Range (ΔU)	: Please look at labels on the device.
	Operating Frequency (f)	: 50/60 Hz
	Accuracy	: 1% ± 1 digit
Measuring ranges	Ammeter	: 0,05-5,5A ~
	Voltmeter	: 10-300VAC (Phase-Neutral) 10-500VAC (Phase-Phase)
	For 115VAC	: 10-170VAC (Phase-Neutral) 10-300VAC (Phase-Phase)
Frequencymeter		: 45-65Hz (Auxiliary supply)
Current transformer ratio		: 1 ... 10000/5A
Measuring category		: CAT III
Power Consumption (P <sub>cons</sub> )		: < 4 VA
Burden (each circuit)		: < 1 VA
Demand time (Average)		: 15 min
Equipment protection		: Double Insulation (□)
Box Protection Class		: IP 40
Terminal Block		
Protection Class		: IP 00
Enclosure		: Non-flammable
Operating temperature range		: - 5°C ; +50°C
Storage temperature range		: - 25°C ; +70°C
Wire Thickness		: 2,5mm <sup>2</sup>
Dimensions		: Type PR19, Type PR16
Installation		: Flush-mounting with rear terminals
Weight		: 0,3kg
Package Dimensions		: 36x24,5x24,7 cm.
Package Weight		: 5,5 kg.
Pcs. per Package		: 12 pcs.

\* Please check the device label for proper value.

\* Different supply voltages are adjustable upon request.

### PRECAUTIONS FOR INSTALLATION AND SAFE USE

- Failure to follow those instructions will result in death or serious injury.
- \* Disconnect all power before working on equipment.
  - \* When the device is connected to the network, do not remove the front panel.
  - \* Do not try to clean the device with solvent or the like. Only clean the device with a dry cloth.
  - \* Verify correct terminal connections when wiring.
  - \* Electrical equipment should be serviced only by your competent seller. No responsibility is assured by the manufacturer or any of its subsidiaries for any consequences arising out of the use of this material.
  - \* Only for rack panel mounting.
  - \* **Warning:**
    - A switch or circuit breaker must be connected between the network and the auxiliary supply input of device.
    - Connected switch or circuit breaker must be in close proximity to the device.
    - Connected switch or circuit breaker must be marked as the disconnecting device for the equipment.
    - The type of the used fuse must be FF type and the current of the used fuse must be 1A.
    - No need of a ventilator in the installation area
    - Phase leds light at minimum 30V.
    - Do not use with generator

### Dimensions:

