

DIGITAL MULTIMETER

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-04	●	●		●	●	
EPM-05	●	●	●	●	●	
EPM-06	●	●	●	●	●	●

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 (for EPM-05 / EPM-06)

Frequency value is measured in case L1 phase voltage value is higher than 50 V.

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.
- Power supply is provided by auxiliary wiring, with a phase-neutral connection with fuse protection.


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

Set → Press the Set key for 3 sec.to select CT ratios. 


Set → Press Set again and enter the CT Ratio setup menu. 


 → Press UP / DOWN keys to select required CT ratio. 



Set → Press the Set key to save the required CT ratio. 


Measurement Mode → If you don't touch any key for about 3 sec. the device returns automatically to the measurement mode. 


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

Set → Press the Set key for 3 sec.to select Utr ratios. 



Set → Fint VT by UP/DOWN keys. Press Set again and enter the Utr Ratio setup menu. 



 → Press UP/DOWN keys to select required Utr ratios. 

Set → Press the Set key to save the required Utr ratios. 


Measurement Mode → If you don't touch any key for about 3 sec. the device returns automatically to the measurement mode. 



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


 This screen displays as default, the measured value of V_{L1-N} LED L1 lights. 



 You may scroll through the phase and phase to neutral voltage values by pressing this key. 

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

Set → Press Set key for 3 sec to start demand time setup. 



 → Press DOWN key multiple times until arriving to the demand time (dt). 



Set → Press Set key to enter demand time Setup.Preset value will be displayed. 



 → Set the required demand time by UP/DOWN keys. 



Set → Press Set key to save the required demand time. If you don't touch any key for about 3 sec. the device returns automatically to the measurement mode.



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

 → Press phase select key until you see the phase which you want to know the maximum and minimum. 

 → Press UP key continuously to display the maximum value of this voltage. 

 → When you release the UP key, the screen returns to the real time voltage of the selected lines. 

 → Press DOWN key continuously to display the minimum value of this voltage. 

 → When you release the DOWN key, the screen returns automatically to the measurement mode, to display the real time voltage of the selected lines. 

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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.

~A 000 ok
~A 000 ok

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

~V 379 L1 L2 L3
~0.98 Cosφ Hz

At the voltage VL3-L1, the lowest display reverts to show the frequency of L3-L1 phase-phase voltage and Hz indicator lights.

~V 382 L1 L2 L3
~50.0 Cosφ Hz

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.

~A 14.1 ok
~A 21.4 ok
~A 23.5 ok

Note: When the key is released, the current displays revert to display the actual currents of the lines.

To Display the Cosφ:

Using the phase select key, when voltage is at L1, the cosφ LED lights and the cosφ of VL1-N is displayed

~V 220 L1 L2 L3
~0.98 Cosφ Hz

Using the phase select key, when voltage is at L2, the cosφ LED lights and the cosφ of VL2-N is displayed

~V 221 L1 L2 L3
~0.98 Cosφ Hz

Using the phase select key, when voltage is at L3, the cosφ LED lights and the cosφ of VL3-N is displayed

~V 219 L1 L2 L3
~0.85 Cosφ Hz

Using the phase select key, when voltage is at L1-L2, cosφ LED lights and the average cosφ is displayed

~V 379 L1 L2 L3
~0.85 Cosφ Hz

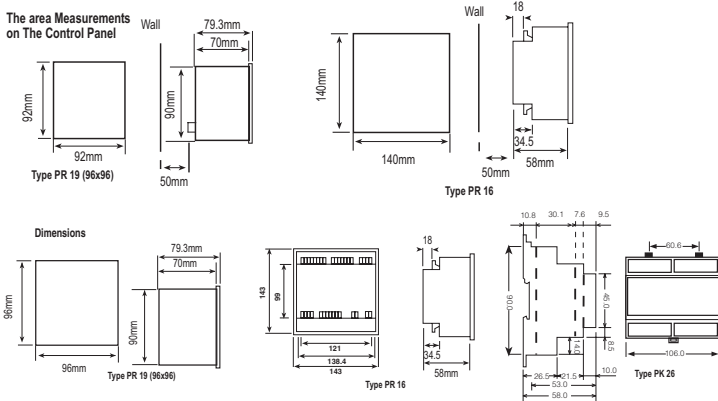
Using the phase select key, when voltage is at L2-L3, cosφ LED lights and the average cosφ is displayed

~V 382 L1 L2 L3
~50.0 Cosφ Hz

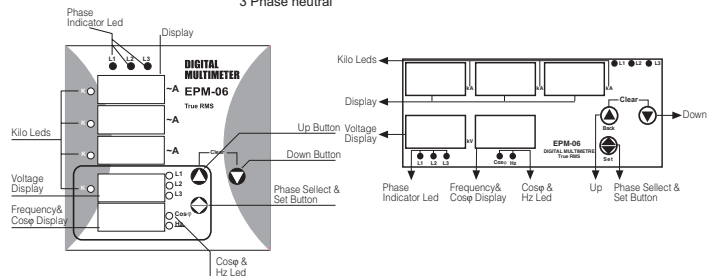
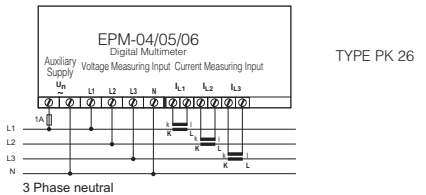
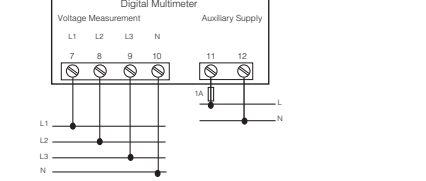
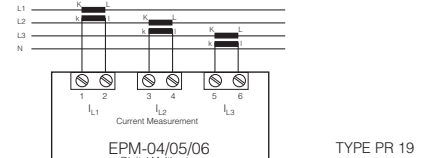
PRECAUTIONS FOR INSTALLATION AND SAFE USE

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) A switch or circuit breaker must be connected between the network and the auxiliary supply input of device.
 - b) Connected switch or circuit breaker must be in close proximity to the device.
 - c) Connected switch or circuit breaker must be marked as the disconnecting device for the equipment.
 - d) The type of the used fuse must be FF type and the current of the used fuse must be 1A.
 - e) No need of a ventilator in the installation area
 - f) Phase leds light at minimum 30V.
 - g) Do not use with generator



Connecting Diagram



Note: Phase leds light in case, voltage value is higher than 30 V.

Technical data

Operating Voltage (U _n)*	: Please look at labels on the device.
Operating Range (ΔU)	: 50/60 Hz
Operating Frequency (f)	: 1% ± 1 digit
Accuracy	
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
Current Transformer Ratio	: 5 ... 10000/5A
Voltage Transformer Ratio	: 1 ... 2000
Measuring Category	: CAT III
Installation / Overvoltage Category	: II
Pollution Degree	: 2
Power Consumption (P _{cons})	: <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 ²
Dimensions	: PR19, PR16, PK-26
Installation	: Panel Mounted (PR-19, PR-16) Rail Mounted (PK-26)
Weight	: 0,3kg (PR-19) 0,45 kg (PK-26) 0,8 kg (PR-16)

* Please check the device label for proper value.
* Different supply voltages are adjustable upon request.

