

# Switchboard Meters



## Moving Iron 90° AC Current

CT Operated 1 or 5A  
Overscale x2,5,6  
DIRECT 5,10,15,20,30,40A  
SIZES 48,72,96,144mm<sup>2</sup>  
Code: EQK  
Eg. EQK96 800/5AOSX2



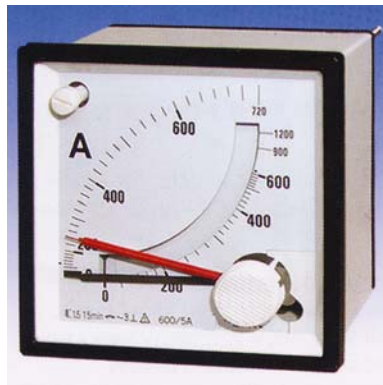
## Maximum Demand (MDI) AC Current 90°.Optional contact output

CT Operated 1 or 5A, 15min  
Overscale x 1.2 fixed  
SIZES 72,96,144mmi  
Code: BLOK  
Eg. BLOK96 100/5A



## Moving Iron 90° AC Voltage

VT Operated 100 or 110V  
DIRECT 0~10V to 0~500V  
SIZES 48,72,96,144mm<sup>2</sup>  
Code: EQK  
Eg. EQK96 150V



## Combined Max. A Demand (MDI) and Instantaneous AC Current 90°

CT Operated 1 or 5A, 15min  
Overscale x 1.2 MDI x 2 A  
SIZES 72,96,144mmi  
Code: BOQK  
Eg. BOQK96 600/5A



## Moving Iron 90° AC Voltage or Current with Phase Selector Switch

DIRECT 150,300,500V,5A  
SIZES 48,72,96,144mmi  
Code: TEQK  
Eg. TEQK96 500V 6Pos



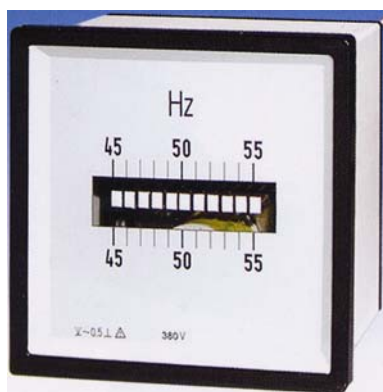
## Frequency AC Pointer 90°

45-55, 45-65, 55-65Hz  
110, 240, 415V  
SIZES 48,72,96,144mmi  
Code: FAK  
Eg. FAK96 45-55Hz110V



## Moving Coil Rectified 240° AC Voltage or Current

CT Operated 1 or 5A  
DIRECT 1mA-5A  
SIZES 48,72,96,144mmi  
Code: PARK  
Eg. PARK72 30/5A



## Frequency AC Vibrating Reed 90°

45-55, 45-65, 55-65Hz  
110, 240, 415V  
SIZES 72,96,144mmi  
Code: FK  
Eg. FK96 45-55Hz240V

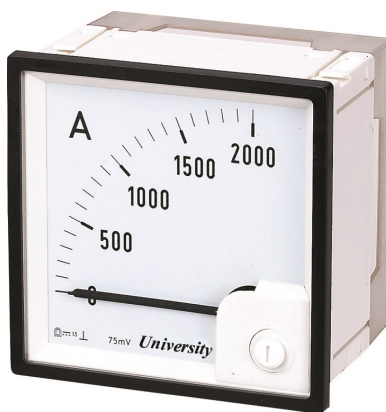
# Switchboard Meters



**Watts Vars 90° or 240°. Electronic**

CT Operated 1 or 5A  
415V or 110V  
SIZES 96mm  
3Phase 3 or 4 Wire

Code: WPQK, QPQK  
Eg. WPQK96-34



**Moving Coil 90° or 240°**

**DC Current**  
50uA-30A Direct (above via shunt), 4-20mA  
SIZES 48, 72,96,144mm

Code: PQK, PAQK  
Eg. PQK96 4~20mA



**Power Factor 90° or 240° Electronic**

CT Operated 1 or 5A  
415V or 110V  
SIZES 96mm  
3 Phase / 2  
Single phase / 1

Code: EPQK, EPAK  
Eg. EPQK96/2



**Moving Coil 90° or 240°**

**DC Current**  
50mV to 1000V, 1-5V,  
50,60,75mV for shunts  
SIZES 48, 72,96,144mm

Code: PQK, PAQK  
Eg. PAQK96 500V



**Synchronisation 240° . Electronic**

CT Operated 1 or 5A  
415V or 110V  
SIZES 96mm  
3 Phase / 2  
Single phase / 1

Code: SQK  
Eg. SQK96/2



**Phase Sequence**

110, 240, 415V  
SIZES 96mm

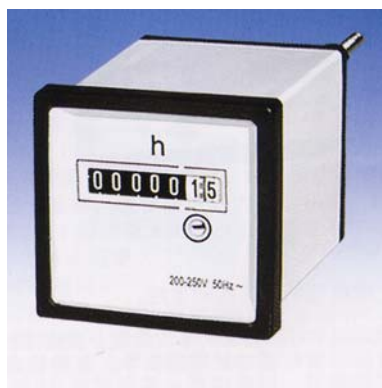
Code: PSK  
Eg. PSK96 110V



**kWh**

CT Operated 1 or 5A  
415V or 110V  
SIZES 96mm  
\* DIGITAL MWH now Available

Code: M600  
Eg. M600-WM9 800/5A



**Elapsed Time (Hours Run)**

110, 240, 415V  
SIZES 48, 72,96mm

Code: CHK  
Eg. CHK96 240V

# Switchboard Meters

## 1. Application

University Paton Instrument's direct acting meters are direct acting indicating analogue electrical measuring instruments. They are suitable to be used in distribution panels, control panels and other applications for measuring DC current, Voltage, AC current, Voltage, frequency, active and reactive power, power factor, synchroscope, phase indicator and other non-electric values.

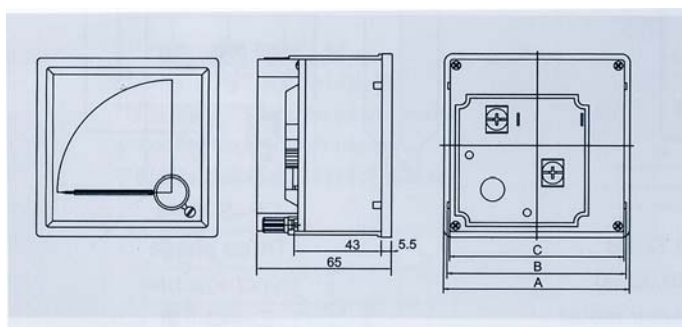
## 2. Technical data and approvals

- 2.1 Standards:** University Paton Instrument's switchboard meters comply with the standard GB7676-1998 (idt IEC51-1997) and the standard IEC 1010-1(1990) Am2(1992), Am3(1995). All cases conform to the standard IEC-473. University Paton Instrument's products have both CE (KEMA) and C-Tick approval.
- 2.2 Cases:** All cases at least dust and splash-proof. All cases are made of non-combustible plastic material according to UL94-VO.
- 2.3 Zero adjustment:** All pointer type instruments have zero adjustments from the front.
- 2.4 Movement bearing:** The movements of all indicating instruments are fitted with pivot bearings in order to make the instruments vibration proof up to max. 2.5g and shock proof up to 15g. The movements are fitted with resilient jewel bearings.
- 2.5 Working Temperature:** All instruments operate trouble-free at temperatures ranging from -25°C to +40°C
- 2.6 Temperature range for storage:** -40°C up to +70°C.
- 2.7 Temperature influence:** An ambient temperature of +23°C, is the reference temperature. The range of temperature influence is from 13-23°C to 23-33°C, Unless otherwise specified in the class. The range of influence may be varied.
- 2.8 University Paton Instrument's moving-coil products** have core-magnet movements.
- 2.9 Mounting Angle:** The instruments are calibrated for vertical mounting, unless other positions such as horizontal or inclined at any specified angle to the horizon can be provided upon request (in this case, specify angle of inclination, please) The accuracy class refers to the specified mounting angle only.
- 2.10 Insulation test:** The insulation test is carried out at a voltage of 2000 Volts, 50HZ 1 min and applies for instruments with the full scale deflection up to 650V. Other standards comply with IEC1010-1.
- 2.11** The user shall be made aware that, if the meter is used in a manner not specified by the manufacturer, the protection provided by the meter may be impaired.
- 2.12 Accuracy class:** AC, DC Voltmeters and Ammeters comply with the accuracy class 1.5. Watt and Var meters comply with accuracy class 1.5. Frequency meters comply with accuracy class 1.0. Maximum-demand meters with accuracy class 3.0. Power factor meters and synchroscope meter comply with accuracy class 2.5.

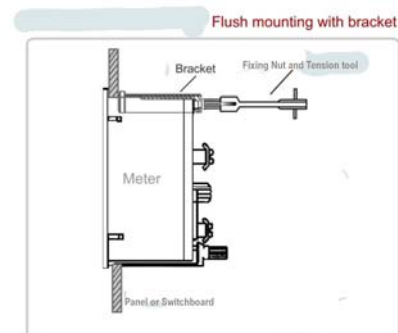
## 3. Construction

- 3.1** Koala EQK series are moving-iron. They are shockproof by means of resilient bearings 15 to 100Hz with oil damping. Ammeter with overload scales are available on request up to twice rated current. The overload range is substantially compressed. Ammeters with overload scale of five or six times rated current are available in CT operated meters.
- 3.2** Koala POK and PAQK series are moving coil, The scales are linear.
- 3.3** Koala PRK and PARK meters are moving coil rectified. The meters responding to approximate r.m.s values with a distortion factor of 15%. The scales are usually linear except for the beginning slightly compressed near zero,
- 3.4** Koala FAK and FAGK frequency meters are moving coil with built-in frequency converters. Voltage fluctuations of +/-20% are permissible.
- 3.5** Koala FK meters are vibrating reed frequency meters. Voltage fluctuations permissible up to 20%.
- 3.6** Koala WPQK and QPQKs power and reactive power meters are moving coil with built-in power converter meters to measure active or reactive power in AC single, three phase three wire and three phase four wire, 50 or 60HZ. Scale is linear.
- 3.7** Koala EPQK and EPAK power factor meters are moving coil with built-in converter meters for measuring power factor.
- 3.8** Koala BIQK maximum-demand meters are bimetal movement instruments for measuring maximum current values as maximum demand within a preset period of 15 minutes. BOQK meters are combined BIQK and EQK ammeters.
- 3.9** Koala SQK synchroscope meters are moving-iron instruments used for phase comparison for single phase and three phase AC circuits, 50 or 60HZ.

## 4. Dimensions

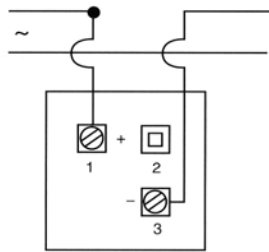


A= Bezel	48mm	72mm	96mm	144mm
B= Panel cut out	44mm	68mm	92mm	140mm
C= Case	42mm	66mm	90mm	138mm

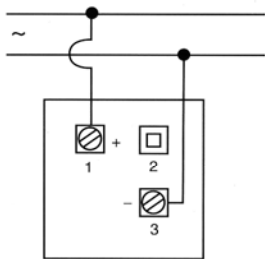


# Switchboard Meters

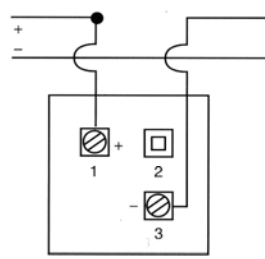
## Connections



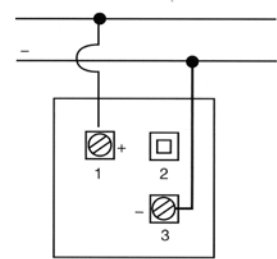
AC Ammeter  
EQK



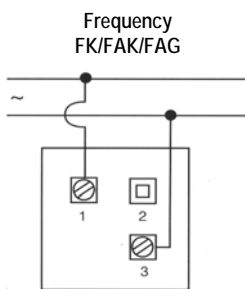
AC Voltmeter Hour Run  
EQK/CHK



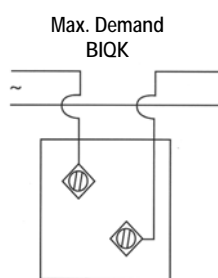
DC Ammeter  
PQK/PAQK



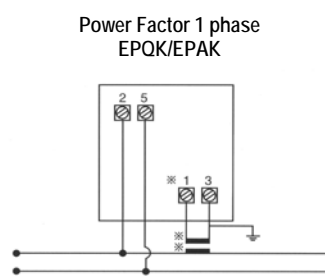
DC Voltmeter  
PQK/PAQK



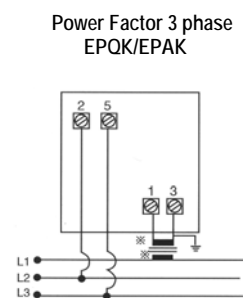
Frequency  
FK/FAK/FAG



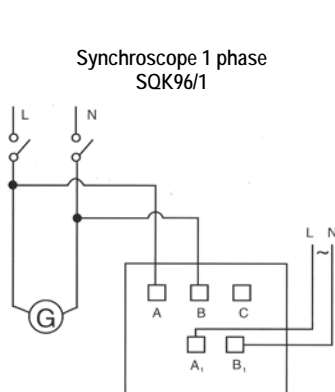
Max. Demand  
BIQK



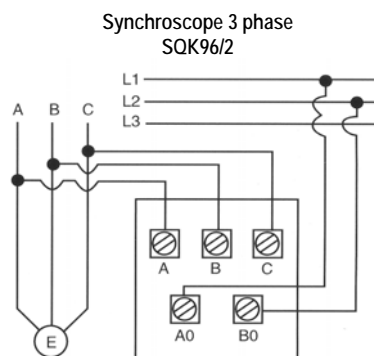
Power Factor 1 phase  
EPQK/EPAK



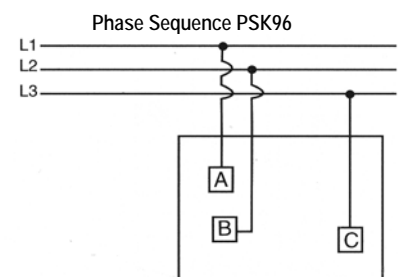
Power Factor 3 phase  
EPQK/EPAK



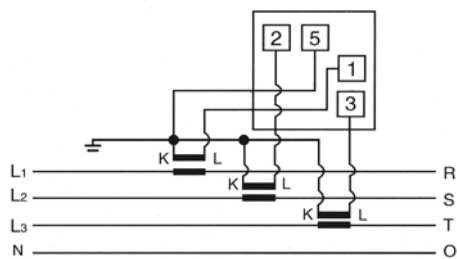
Synchroscope 1 phase  
SQK96/1



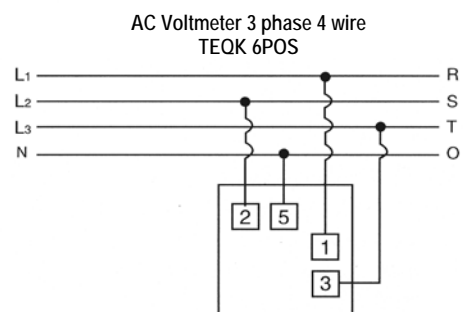
Synchroscope 3 phase  
SQK96/2



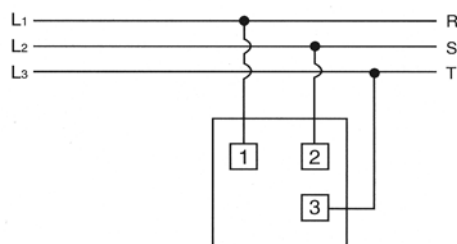
Phase Sequence PSK96



AC Ammeter 3 phase with switch  
TEQKA



AC Voltmeter 3 phase 4 wire  
TEQK 6POS



AC Voltmeter 3 phase 3 wire  
TEQK 3POS