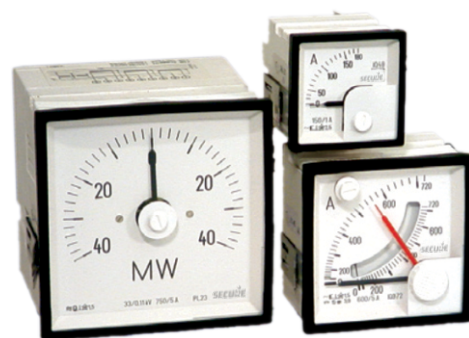


# Analogue Panel Instruments

We offer a comprehensive range of analogue and panel instruments for use in control and instrumentation systems. The range includes moving-iron and moving-coil mechanisms in a variety of formats, scales and sizes. All our panel meters are robust, accurate and constructed from high-quality materials to give a long service life. Ammeters, voltmeters and power meters are available with a large range of scales and can be further customised for special applications.



## Applications

- HV and LV switchgear panels
- Control and relay panels
- Power control centre (PCC) panels
- Motor control centre (MCC) panels
- Test benches
- Laboratory equipment

## Benefits

- Easy to install, with snap-in mounting
- Well proven instrument designs for high quality and reliability
- Complete product range for a wide range of applications
- Low power consumption
- No need for additional magnetic shielding

## Features

- Range of standard front panel sizes: 48x48, 72x72 and 96x96 mm
- Range of scales: quadrant (90°), circular (240°) and edgewise
- Options for different mounting positions: horizontal, vertical or angled
- Ingress protection rating IP 54 across the range
- Wide temperature range: -25 °C to +50 °C
- Models available for AC or DC measurement
- Measured parameters:
  - Current
  - Voltage
  - Frequency
  - Power (active or reactive)
  - Power factor
  - Maximum demand (current)
  - Synchronisation (pointer synchroscope, twin voltmeter or twin frequency meter)

# Analogue Panel Instruments

## Technical specifications

### **Moving Iron Instruments: AC Ammeters and Voltmeters**

Scale type	Quadrant (90°)
Front panel size	48x48, 72x72 or 96x96 mm
Linearity	From 20% to 100% of full range
Frequency	15-100 Hz A-meter 50-60 Hz V-meter
Measuring ranges	13 models cover 1 A to 60 A (plus 1 A or 5 A via current transformer) 13 models cover 60 V to 800 V (plus 100 V or 110 V via voltage transformer)
Overload capability	1.2x Un continuously, 2x Un for 5 s, 2x In continuously, 10x In for 10 s CT-operated ammeter: 50x In for 1 s

### **Moving Coil Instruments: DC Ammeters and Voltmeters**

Scale type	Quadrant (90°), circular (240°) or edgewise (70°)
Front panel size	48x48, 72x72 or 96x96 mm (quadrant or circular scale) 48x24, 72x24 or 96x48 mm (edgewise scale)
Linearity	Full range
Measuring ranges	
Quadrant scale	30 models cover 1 mA to 25 A   22 models cover 60 mV to 600 V
Circular scale	26 models cover 1 mA to 25 A   22 models cover 60 mV to 600 V
Edgewise scale	23 models cover 100 µA to 1 A   16 models cover 1 V to 600 V
Overload capability	1.2x Un continuously, 2x Un for 5 s, 2x In continuously, 10x In for 10 s

### **Moving Coil Instruments: AC Ammeters and Voltmeters**

Scale type	Quadrant (90°), circular (240°) or edgewise (70°)
Front panel size	48x48, 72x72 or 96x96 mm (quadrant or circular scale)
Linearity	Full range
Frequency	40 to 10000 Hz
Measuring ranges	
Quadrant scale	18 models cover 1 A to 1 A (plus 1 A or 5 A via current transformer) 12 models cover 25 V to 600 V (plus 110 V via voltage transformer)
Circular scale	16 models cover 1 mA to 1 A (plus 1 A or 5 A via current transformer) 12 models cover 25 V to 600 V (plus 110 V via voltage transformer)
Overload capability	1.2x Un continuously, 2x Un for 5 s, 2x In continuously, 10 In for 10 s

### **Maximum Demand Ammeter with Bimetallic Movements (With or Without Moving-iron Ammeter)**

Scale type	Quadrant (90°)
Front panel size	48x48, 72x72 or 96x96 mm
Setting time	15 minutes
Frequency	15 to 100 Hz
Measuring range	25 models cover 0-6 A (plus 1 A or 5 A via current transformer)

### **Power Meters (Active and Reactive) and Power Factor Meters**

Scale type	Quadrant (90°) or circular (240°)
Front panel size	96x96 mm
Frequency	40 to 65 Hz
Measuring range	Input current: 1, 2, 5 or 10 A (power meters only) Input voltage: 100, 110, 230, 400 or 500 V

### **Frequency Meters**

Scale type	Quadrant (90°)
Front panel size	72x72 or 96x96 mm
Voltage	110, 230 or 400 V
Measuring range	46-54 Hz, 56-64 Hz

Specifications are subject to change without prior notice.