Data Sheet

Vibrating Reed Type Frequency Meter

FQ  72
FQ  96
Vibrating Reed Type Frequency Meter

**Application**
The reed type frequency meters, FO 72 / 96 housed in moulded polycarbonate cases are suitable for the measurement of frequencies in the range of 45 to 65 Hz. These instruments offer several advantages in switchboard and Generating Set Panels. Number of meters can be mounted in a single Cut out (Mosaic mounting). Front glass, Bezel & Dial can be easily replaced.

**Functional Principle**
Vibrating reed type frequency meter is a mechanical resonance type frequency meter which consists of an electromagnet and reeds. This movement consists of a number of thin steel strips called reeds fixed on a steel plate. These reeds are placed in a row close to an electromagnet as shown in Figure 1. The coil of an electromagnet is connected across the supply, whose frequency is to be measured, along with a series resistance, mounted on the backside of the instrument.

**Mechanical Data**
- **Case details**: Moulded square case suitable for mounting in Control / Switchgear panels. Machinery consoles.
- **Case material**: Glass filled polycarbonate, flame retardant and drip proof as per UL 94 V-0.
- **Front facia**: Glass
- **Colour of bezel**: Black
- **Position of use**: Vertical
- **Panel fixing**: Swivel screws
- **Mounting**: Stackable in a single cutout
- **Panel thickness**: ≤ 25 mm
- **Terminals**: Hexagon studs, M4 screws And wire clamps E3
- **Mechanical properties**: VDE 0411, Part 1 Clause 43/44

**Standard Measuring Ranges**
- **Frequency Range**: 45,...50,...55 Hz
- 45,...65,...65 Hz
- 55,...60,...65 Hz
- 47,...50,...53 Hz

- **Rated input voltage**
  - 110 V
  - 220 V
  - 230 V
  - 240 V
  - 400 V
  - 415 V
  - 440 V

**Accuracy at Reference Conditions**
- **Accuracy class**: 0.5 according to IS: 1248 (IEC 51/ DIN EN 60051)
- **Reference conditions**
  - **Ambient temperature**: 23 °C ± 2 °C
  - **Position of use**: Nominal position ± 1°
  - **Input**: Rated Voltage ± 2%
  - **Other conditions**: IS : 1248 (IEC 51/ DIN EN 60051)
  - **Nominal range of use**
    - **Ambient temperature**: 0...50 °C
    - **Position of use**: Nominal position ± 5°
    - **External magnetic field**: 0.5 mT
    - **Voltage**: Rated Voltage ± 15 %

**Environmental Conditions**
- **Climatic suitability**: Climate category II as per IS : 1248, IS 9000 (climatic class 3 according to VDE/VDI 3540)
- **Operating temperature**: - 10... + 55 °C
- **Storage temperature**: - 25... + 65 °C
- **Relative humidity**: ≤ 75% annual average, non-condensing
- **Shock resistance**: 15g, 11ms
- **Vibration resistance**: 10-55-10 Hz / 0.15mm
- **Pollution degree**: 2

**Electrical Data**
- **Measured quantity**: Frequency
- **Input quantity**: Alternating voltage in sine waveform (acc. to IS: 1248 / IEC 51)
- **Overload capacity**: 1.2 times rated voltage
- **Continuously**: 2 times rated voltage,5 sec
- **Short duration**: 2 times rated voltage,5 sec
- **Protection against ingress of foreign bodies**: IEC 529 (DIN 40050)
- **Enclosure code (IEC 529)**: IP 52 case
- **Insulation class**: Group A according to VDE 0110
- **Rated insulation voltage**: 660V
- **Proof voltage**: 2kV
- **Installation category**: 300V CAT III
- **Insulation resistance**: > 50 Mohm at 500 V d.c
- **Power consumption**: ≤ 5VA
Vibrating Reed Type Frequency Meter

Applicable Standards

Specifications for direct acting indicating analogue electrical instruments & their accessories.
- IS 1248, IEC 51

Dimensions for panel mounted indicating and recording electrical measuring instruments
- IS 2419
- DIN 43700

Front frames for indicating measuring instruments Principle dimensions
- IS 9249
  - VDE 0410 - 10.76
  - VDE 0106

Safety requirements for indicating and recording electrical measuring instruments
- IS 9249
- VDE 0410 - 10.76
- VDE 0106
- VDE 0106

Degrees of protection provided by the enclosures for electrical instruments
- IEC 529, DIN 40050, VDE 0411

Climate class; determination and testing
- IS 1248, IS 9000
  - VDE / VDI 3540

Electrical panel mounting measuring instruments; terms of delivery.
- DIN 43701

UL Combustibility Class
- UL 94 V-0

Dimensions

<table>
<thead>
<tr>
<th>Dimensions (in mm)</th>
<th>ZQ72</th>
<th>ZQ96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bezel a</td>
<td>72</td>
<td>96</td>
</tr>
<tr>
<td>Case b</td>
<td>66</td>
<td>90</td>
</tr>
<tr>
<td>Depth c</td>
<td>53</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>67.5</td>
<td>91.5</td>
</tr>
<tr>
<td></td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Cutout Size f</td>
<td>68</td>
<td>92</td>
</tr>
<tr>
<td>Depth with Back</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>cover e</td>
<td>68</td>
<td>92</td>
</tr>
<tr>
<td>Weight (approx.)</td>
<td>0.21 kg</td>
<td>0.28 kg</td>
</tr>
</tbody>
</table>

Options

Case
- Front facia: Antiglare glass
- Colour of bezel: Red, Yellow, Blue, White
- Position of use: on request 0 .... 180°

Safety Terminal Protection

Full sized polycarbonate back cover to provide protection against accidental contact (hand and fingers) acc.to IS 9249, VDE 0410.

Connections

L1
N(L2)
**Vibrating Reed Type Frequency Meter**

### Specifications

<table>
<thead>
<tr>
<th>Type ZQ</th>
<th>Pointer type frequency meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front dimension</td>
<td></td>
</tr>
<tr>
<td>72 mm x 72 mm</td>
<td></td>
</tr>
<tr>
<td>96 mm x 96 mm</td>
<td></td>
</tr>
<tr>
<td>Measuring Ranges</td>
<td>Refer to table inside</td>
</tr>
<tr>
<td>Terminal protection</td>
<td>Full sized polycarbonate back cover</td>
</tr>
<tr>
<td>Front facia</td>
<td>Normal glass(^1) Antiglare glass(^2)</td>
</tr>
<tr>
<td>Colour of bezel</td>
<td>Black(^1), Red, Blue, Yellow, White(^3)</td>
</tr>
<tr>
<td>Position of use</td>
<td>Vertical(^1) On request 0°... 180°(^3)</td>
</tr>
<tr>
<td>Logo</td>
<td>RISHABH(^1), for Indian sales C.G.(^1), for export through Crompton Greaves I.D. Others(^3)</td>
</tr>
</tbody>
</table>

\(^1\) standard

\(^3\) Please clearly add the desired specifications while ordering

* Instruments with damaged bezels or window glasses must be disconnected from mains.

* Adequate safety clearance must be maintained to control panel fasteners and to sheet metal housing, if non-insulated connector wires are used.

* The back cover must be snapped into place after the connector wires have been clamped for protection against accidental contact.

* Scales should be replaced under Voltage-free conditions.

* Bezels and window glasses should be replaced under Voltage-free conditions.

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**Ordering example**

ZQ 96  Measuring range 45...50...55 Hz, rated voltage AC 230V

Specifications are subject to change without notice (08/10)