



Data Sheet

Frequency Meter 90⁰ ZQ



Measure



Control



Record



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Application

The pointer type frequency meters, ZQ 48/ 72/ 96/ 144 housed in moulded polycarbonate cases are suitable for the measurement of frequencies in the range of 45 to 450 Hz.

For maximum accuracy, the essential measuring range is obtained by suppressing the unwanted frequency span.

These instruments offer several advantages in switchboard and Application Generating Set Panels. Number of meters can be mounted in a single Cut out (Mosaic mounting). Front glass, Bezel & Dial can be easily replaced.

Features

- Linear Scale.
- Glass filled polycarbonate housing.
- Knife edge pointer.
- Easily replaceable glass and bezel.
- Easy installation with swivel screws.

Functional Principle

Frequencies are measured with a built in electronic transducer & moving coil indicator. Moving coil movement has pivots of very high hardness. Movement is suspended between spring loaded sapphire jewels. Movement is properly shielded & critically damped by eddy currents induced in coil former.

Specifications

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 single cut out
Panel thickness	: ≤ 25 mm
Terminals	: Hexagon studs, M4 screws And wire clamps E3

Electrical Data

Measured quantity	: Frequency
Input quantity	: Alternating voltage in sine waveform
Overload capacity	: (acc. to IS: 1248 / IEC 51)
Continuously	: 1.2 times rated voltage
Short duration	: 2 times rated voltage, 5 sec
Enclosure code (IEC 529)	: IP 52 case IP 00 for terminals without back cover IP 20 for terminals with back cover
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	: <7VA

Standard Measuring Ranges

Frequency Range	45.....50.....55 Hz 45.....55.....65 Hz 55.....60.....65 Hz 360...400...440 Hz 380...400...420 Hz
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Rated input voltage	57.5 V 63.5 V 100 V 110 V 115 V 120 V 127 V 208 V 220 V 230 V 240 V 289 V 380 V 415 V 440 V 440 V 500 V
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Scale and Pointer

Pointer	: Knife - edge pointer
Pointer deflection	: 0...90
Scale characteristics	: linear *
Scale Division	: Coarse - fine
Scale length	: ZQ 48 ZQ 72 ZQ 96 144 41mm 63 mm 97mm 146 mm

Accuracy at Reference Conditions

Accuracy class	: 0.5 according to IS: 1248 (IEC 51/ DIN EN 60051)
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Reference conditions

Ambient temperature	: 23°C±2°C
Position of use	: Nominal position ± 1°
Input	: Rated Value of measured quantity
Other conditions	: IS : 1248 (IEC 51/ DIN EN 60051)
Preheating time	: ≥ 3 min



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Nominal range of use

Ambient temperature	: 0...50°C
Position of use	: Nominal position $\pm 5^\circ$
External magnetic field	: 0.5 mT
Voltage	: Rated Voltage $\pm 15\%$

Environmental Conditions

Climatic suitability	: Climate category II as per IS : 1248 (climatic class 3 according to VDE/VDI 3540)
Operating temperature	: - 10... + 55°C
Storage temperature	: - 25... + 65°C
Relative humidity	: $\leq 75\%$ annual average, non-condensing
Shock resistance	: 15g, 11ms
Vibration resistance	: 10-55-10 Hz / 0.15mm 1.5 g at about 50 Hz
Pollution degree	: 2

Applicable Standards

Nominal case and cutout dimensions for indicating electrical instruments.	: IS 2419 DIN 43700
Scale and pointer for electrical measuring instruments	: IS 1248, IEC 51 DIN 43802
Connections and Terminal markings for panel meters	: IS 1248, IEC 51 DIN 43807
Terminal bolts / leads	: DIN 46200/46282
Clamp straps for connections.	: DIN 46282
Safety requirements and protective measures for Electrical indicating instruments and their accessories.	: IS 9249 DIN 40050 / 8-70 VDE 0110 /11-72 VDE 0410 /10-76 IEC 529,IEC 1010
Performance specifications for direct acting indicating analogue electrical measuring instruments & their accessories:	: IS 1248, IEC 51 IEC 51/DINEN 60051 DIN 43701
Environmental conditions	: IS 1248 , IEC 51 IS: 9000, Part 5, 7, 8,VDE / VDI 3540
Front frames for indicating measuring instruments principle dimensions.	: DIN 43718
UL Combustibility class.	: UL 94 V-O
Technical conditions of delivery for electrical instruments.	: DIN 43701

Mechanical strength (Free fall test, vibration test)	: IS 1248, IEC 51 IS 9000 VDE 0411, part I, Sec.43/44.IEC 1010
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EMC Compliance as per following standards:-

EN 50081-2,EN 50082-2,EN 55011/CISPR 11,
EN 60555-2,IEC 555-2,
EN 61000-4-4 / IEC 1000-4-4,
EN 61000-4-2 / IEC 1000-4-2,
EN 61000-4-5 / IEC 1000-4-5, ENV 50140.

Comply with following European directives: 89/336/EEC (EMC directive), 73/23/EEC (low voltage directive) & amendment 93/68/EEC, for CE marking.

Options

Case	
Front facia	: Antiglare glass
Colour of bezel	: Red, Yellow, Blue, White
Red index pointer	: Front adjustable on site
Position of use	: on request 0°...180°
Dial	
Blank dial	: With initial & end values marked.
Special markings	: Numbering/ Lettering.
Division dials	: Basic divisions without numbering.
Colour markings/bands	: Red or green.

Safety terminal protection

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

Safety Precautions

- 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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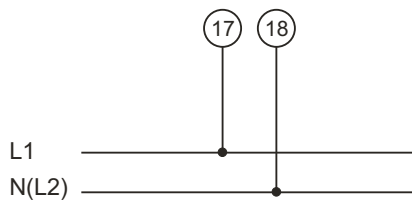


Analyze

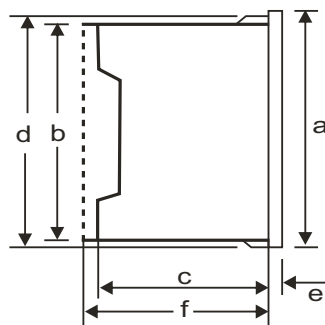


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Connections



Dimension



Dimensions (in mm)	ZQ48	ZQ72	ZQ96	ZQ144
Bezel	a □ 48	□ 72	□ 96	□ 144
Case	b □ 43.5	□ 66	□ 90	□ 136
Depth	c* □ 53	□ 53	□ 53	□ 53
	d □ 44.5	□ 67.5	□ 91.5	□ 137.5
	e 5.5	5.5	5.5	5.5
Cutout Size	□ 45 ^{+0.6}	□ 68 ^{+0.7}	□ 92 ^{+0.8}	□ 138 ⁺¹
Depth with Back cover	f ** 64	64	64	64
Weight (approx.)	0.15 kg.	0.21 kg.	0.28 kg.	0.49 kg.



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Ordering Information

Type : ZQ	Pointer type frequency meter
Front dimension : 48 72 96 144	48 mm x 48 mm 72 mm x 72 mm 96 mm x 96 mm 144 mm x 144 mm
Measuring ranges	Refer to table inside
Terminal protection	Full sized polycarbonate back cover
Front facia	Normal glass ^{*1} , PC glass ^{*3} Antiglare glass ^{*3}
Colour of bezel	Black ^{*1} Red, Blue, Yellow, White ^{*3}
Position of use	Vertical ^{*1} on request 0....180° ^{*3}
Dial	Standard scale same as measuring range ^{*1} Blank dial with division ^{*3} Additional lettering on request ^{*3} Additional numbering on request ^{*3} Coloured marking red or green ^{*3} Coloured sector red or green ^{*3}
Logo	RISHABH ^{*1} , Others ^{*3}

*1 standard

*3 Please clearly add the desired specifications while ordering

Ordering example

ZQ 72 Measuring range 45....50....55 Hz, rated voltage AC 230V

Specifcations are subjects to change without notice (11/11)



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Specifications may change without prior notice.



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