

ZL 96 



Data Sheet

Analogue Pointer-Type

Frequency Meters

240°Scale



In Technical Collaboration with



Application

The pointer type frequency meters ,ZL 96 housed in moulded polycarbonate cases are used 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 switchboards 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

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 saphire jewels.Movement is properly shielded & critically damped by eddy currents induced in coil former.

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	≤ 40 mm
Terminals	Hexagon studs, M4 screws and wire clamps E3

Electrical Data

Measured quantity	:Frequency
Overload capacity	(acc. to IS: 1248 / IEC 51)
Continuously	:1.2 times rated voltage
Short duration	:2 times rated voltage,5 sec
Input quantity	:Alternating voltage in sine waveform
Enclosure code (IEC 529)	IP 52 case IP 00 for terminals
Insulation class	Group A according to VDE 0110
Rated insulation voltage	660V
Proof voltage	2kV
Installation category	600 V CAT III
Insulation resistance	> 50 Mohm at 500 V d.c
Power consumption	<= 7VA

Standard Measuring Ranges

Frequency Range

45.....50.....55Hz
48.....50.....52Hz
45.....55.....65Hz
55.....60.....65Hz
58.....60.....62Hz
180...200...220Hz
360...400...440Hz
380...400...420Hz

Rated input voltage

57.7 V
63.5V
100 V
110 V
115 V
120 V
127V
208 V
220 V
230 V
240 V
289 V
380 V
400 V
415 V
440 V
500 V

Scale and Pointer

Pointer	Knife - edge pointer
Pointer deflection	0...240°
Scale characteristics	linear
Scale division	Coarse - fine
Scale length	142mm

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 value of measured quantity
Other conditions	IS : 1248 (IEC 51/ DIN EN 60051)
Preheating time	>= 5 min
voltage	rated voltage + or - 2%
Nominal range of use	
Ambient temperature	0...50°C
Position of use	Nominal position ± 5°
External magnetic field	0.5 mT
Voltage	Rated voltage + or - 20%

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	≤ 75% annual average, non-condensing
Shock resistance	15g, 11ms
Vibration resistance	10-150-10 Hz / 0.15mm 1.5 g at about 50 Hz.

Applicable Standards

Nominal case and cutout dimensions for indicating Electrical instruments	: IS 2419 DIN 43700
Scale and pointer for electrical measuring instruments	: IS 1248 DIN 43802
Connections and Terminal markings for panel meters	: IS 1248-1983 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 9249-1979 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 and their accessories	: IS 1248-1983 IEC51/DINEN60051 DIN 43701
Environmental conditions	: IS 1248 - 1983 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-0
Technical conditions of delivery for electrical instruments	: DIN 43701
Mechanical strength (Free fall test, vibration test)	: IS 1248 / IEC 51 IS 9000-1979 VDE 0411, part 1, Sec. 43/44, IEC 1010

EMC compliance as per following standards:
EN 50081-2, EN 50082-2, N 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

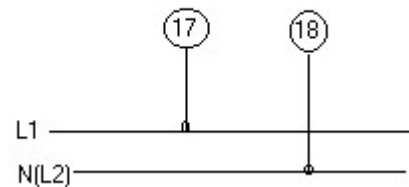
Case	
Front facia	Antiglare glass
Colour of bezel	Red, Yellow, Blue, White.
Red index pointer	Front adjustable on site
Position of use	on request 0°180°
Dial	
Blank dial	With initial and end values marked.
Special markings	Numbering / Lettering.
Division dials	Basic divisions without numbering.
Colour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

Data Sheet

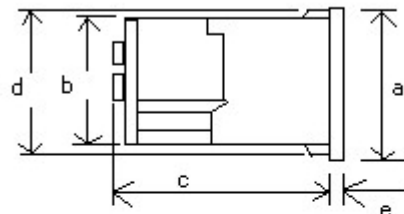
Analogue Pointer-Type

Frequency Meters , 240° Scale

Connections



Dimensions



Dimensions (in mm)	ZL96
Bezel	a □ 96
Case	b □ 90
Depth	c 106
	d □ 91.5
	e 5.5
Cutout size	□ 92 +0.8
Weight(approx)	0.45kg



Type Z L	Pointer type frequency meter,240 scale
Front dimension 96	96mm x 96mm
Measuring ranges	refer to table inside
Front facia	Normal glass ¹ Antiglare glass ³
Colour of bezel	Black ¹ Red,Blue,Yellow,White ³
Position of use	Vertical ¹ on request 0....180 ° ³
Terminal protection	Full sized polycarbonate back cover
Rated Voltage	Refer to table inside
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 , for Indian Sales C.G. ¹ , for export through Crompton Greaves. I.D. Others ³

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.

Ordering example

ZL 96 measuring range 45,,,,,50.....55 Hz,rated voltage AC 230V.

Specifications are subject to change without notice(10/98)



Manufactured by

RISHABH INSTRUMENTS PVT. LTD.

F-31, MIDC, Satpur, Nashik-422 007. (INDIA)

Phone : 351062, 351063. FAX : (0253) 351064.

E-mail : rishabh@bom2.vsnl.net.in

Indian Sales :-

Switchgear-
Standard products Division
LARSEN & TOUBRO LIMITED
L&T House, Ballard Estate,
P.O. Box. 278, Mumbai-400 001.
Tel.: 2618181, 2618182, Fax: (022) 2620223.

International Sales:-

CROMPTON GREAVES
International Division
"Jagruti", Kanjur Marg (E), Mumbai. 400 042.
Tel.: 5782451. Direct - 5776649, Fax : (022) 5774066.