



Data Sheet

K Series 432.D.101.08

Analog Pointer-Type Frequency Meters 90° or 240° Dial

ZQ 48 K ZQ 72 K ZQ 96 K ZQ 144 K LSZ 96 K

with Slide-In-Dial





Application

The pointer-type frequency meters **ZQ48/72/96/144 K** with 90 $^{\circ}$ dial and **LSZ 96 K** with 240 $^{\circ}$ dial (K series) housed in moulded thermoplastic cases are used for measurement of frequencies in the range of 50, 60, 200 or 400 Hz.

For maximum accuracy, the meteers show only a small range around the selected nominal frequency. The non-interesting measuring range is suppressed electronically.

The bezel, the front window and the dial can be exchanged easily.

Functional Principle

Self-shielding moving-coil movements with core-type magnet and pivot suspension (ZQ) or with swivel coil (LSZ). Spring loaded jewel bearings for vibration and shock resistance.

Electronic measuring unit based on condensor reloading.

Mechanical Data

case details	in control	/ switchge	se suitable to ar panels, m panels, stac	nachine tool
material of case			noplastics, UL rating o	f 94 V – 0
material of window	glass 🛊			
colour of bezel	black (sir	nilar to RA	L 9005) 🛊	
position of use	vertical ±	:5° ♦		
panel fixing	screw cla	ımps		
mounting	stackable	e next to ea	ch other	
panel thickness	≤ 40 mm			
terminals	hexagon wire clam		screws and	
dimensions (in mm)	ZQ 48 K	ZQ 72 K	ZQ 96 K LSZ 96 K	ZQ 144 K
bezel	□ 48	□ 72	□ 96	□ 144
case	□ 42.5	□ 66	□ 90	□ 136
depth	53	53	53	53
panel cutout	□ 45+0.6	□ 68+0.7	□ 92+0.8	□ 138 ⁺¹

0.13 kg 0.3 kg

Electrical Data

measuring unit frequency

admissible voltage

weight approx.

-15% ... +10% of rated voltage

variation

13 /6 ... + 10 /6 of fated voltage

power consumption ≤ 3 VA measurement category CAT III

operating voltage refer to Measuring Ranges

pollution level 2

enclosure code IP 52 case front side

IP 00 for terminals without protection against

0.3 kg

0.3 kg

accidental contact

IP 20 for terminals protected against

accidental contact ▶

Measuring Ranges

frequency range

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

rated voltage	operating voltage		
		ZQ 72 K ZQ 96 K	LSZ 96 K ZQ 144 K
57.7 V ¹)	_	150 V	150 V
63.5 V ¹)	_	150 V	150 V
100 V ¹)	_	150 V	150 V
110 V	150 V	150 V	150 V
115 V ¹)	_	150 V	150 V
120 V ¹)	_	150 V	150 V
127 V ¹)	_	150 V	150 V
208 V ¹)	_	300 V	600 V
230 V ¹)	_	300 V	600 V
289 V ¹)	_	300 V	600 V
400 V ¹)	_	300 V	600 V
415 V ¹)	_	300 V	600 V
440 V ¹)	_	300 V	600 V
500 V ¹)	_	300 V	600 V
1) not for 7Q 48 K			

Scaling

dial	flat dial

pointer bar / knife-edge pointer
pointer deflection 0 ... 90° (ZQ)
0 ... 240° (LSZ)

scale characteristics linear scale division coarse–fine

scale length ZQ 48 K ZQ 72 K ZQ 96 K ZQ 144 K 41 mm 61 mm 97 mm 146 mm

scale length LSZ 96 K 142 mm

Accuracy at Reference Conditions

accuracy class 0.5 according to DIN EN 60 051-1

reference conditions

ambient temperature 23°C

position of use nominal position ±1°
input rated measuring value
voltage nominal voltage
others DIN EN 60 051-1

influences

ambient temperature 23°C±2K

position of use nominal position ±5°

stray magnetic field 0.5 mT





Analog Pointer-Type Frequency Meters 90° or 240° Dial

Environmental

climatic suitability climatic class 3 acc. to VDE/VDI 3540 sheet 2

operating —10 ... +55°C temperature range

storage $-25 \dots +65$ °C temperature range

relative humidity ≤ 75% annual average, non–condensing

shock resistance 15 g, 11 ms vibration resistance 2.5 g, 5 ... 55 Hz

Rules and Standards

DIN 43 718 Measurement and control; front-frames and

frontpanels of measurement and control equipment; principal dimensions

DIN 43 802 Line scales and pointers for indicating

electrical measuring instruments;

general requirements

DIN 16 257 Nominal positions and position symbols used

for measuring instruments

DIN EN 60 051 Direct acting indicating analogue electrical

measuring instruments and their accessories

-1 Part 1: Definitions and general requirements

common to all parts

-4 Part 4: Special requirements for frequency

meters

-9 Part 9: Recommended test methods

DIN EN 60 529 Enclosure codes by housings (IP-code)

DIN EN 61 010-1 Safety requirements for electrical measuring,

control and laboratory equipment

Part 1: General requirements

DIN EN 61 326-1 Electrical equipment for measurement, con-

trol and laboratory use - EMC requirements

Part 1: General requirements

(IEC 61 000-4-3 evaluation criterion B)

DIN IEC 61 554 Panel mounted equipment –

Electrical measuring instruments – Dimensions for panel mounting

VDE/VDI 3540 sheet 2 reliability of measuring and control

equipment (classification of climates)

Options

rated voltage on request

(ZQ 48 K)

case

window non-glaring glass

colour of bezel gray (similar to RAL 7037)

index marking pointer red, front adjustable (ZQ 48/72/96/144 K only)

position of use on request 15...165° marine application non–certified or

with approbation by "Germanischer Lloyd"

(ZQ 96/144 K only)

terminal protection against accidental contact

full-sized rear cover or protective sleeves

dia

non-calibrated with dial symbols

blank dial pencil-marked on initial and end values

scale division 0 ... 100% and figuring

linear scale division non-standard captions on request

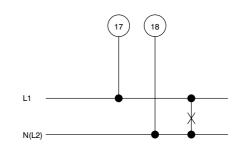
additional lettering on request e.g. "generator"

additional figuring on request

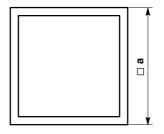
coloured marks red, green or blue for important scale values coloured sector red, green or blue within scale division

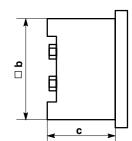
logo on the dial none or on request

Connections



Dimensions





dimensions (in mm)	ZQ 48 K	ZQ 72 K	ZQ 96 K LSZ 96 K	ZQ 144 K
а	48	72	96	144

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Ordering Information

type ZQ LSZ (96 K only)	pointer-type frequency meter, 90° dial pointer-type frequency meter, 240° dial	
front dimensions 48 K 72 K 96 K 144 K	48 mm x 48 mm 72 mm x 72 mm 96 mm x 96 mm 144 mm x 144 mm	
measuring ranges	refer to preceding table	
rated voltages	refer to preceding table	
window	glass ¹) non–glaring glass	
colour of bezel	black (similar to RAL 9005) 1) gray (similar to RAL 7037)	
index marking pointer	none ¹) red, front adjustable ⁴)	
position of use	vertical ¹) on request 15 165° ²)	
marine application	none 1) non-certified with approbation by "Germanischer Lloyd" 3)	
terminal protection	none 1) full–sized rear cover protective sleeves	
dial	scale division & measuring range alike ¹) no dial non–calibrated, with dial symbols blank dial scale division and figuring 0 100% linear scale division ²) additional lettering on request ²) additional figuring on request ²) coloured marks red, green or blue ²) coloured sector red, green or blue ²)	
logo	WEIGEL ¹) none OEM logo ²)	

ordering example

ZQ 96 K, measuring range 45 ... 50 ... 55 Hz, rated voltage AC 230 V, window non–glaring glass, WEIGEL logo

Weigel Meßgeräte GmbH

Postfach 720 154 • 90241 Nürnberg • Phone: 0911/42347-0 Erlenstraße 14 • 90441 Nürnberg • Fax: 0911/42347-39 Phone: 0911/42347-94 Sales: http://www.weigel-messgeraete.de Internet: e-mail: vertrieb@weigel-messgeraete.de



Standard
 Please clearly add the desired specifications.
 ZQ 96/144 K only
 ZQ 48/72/96/144 K only