



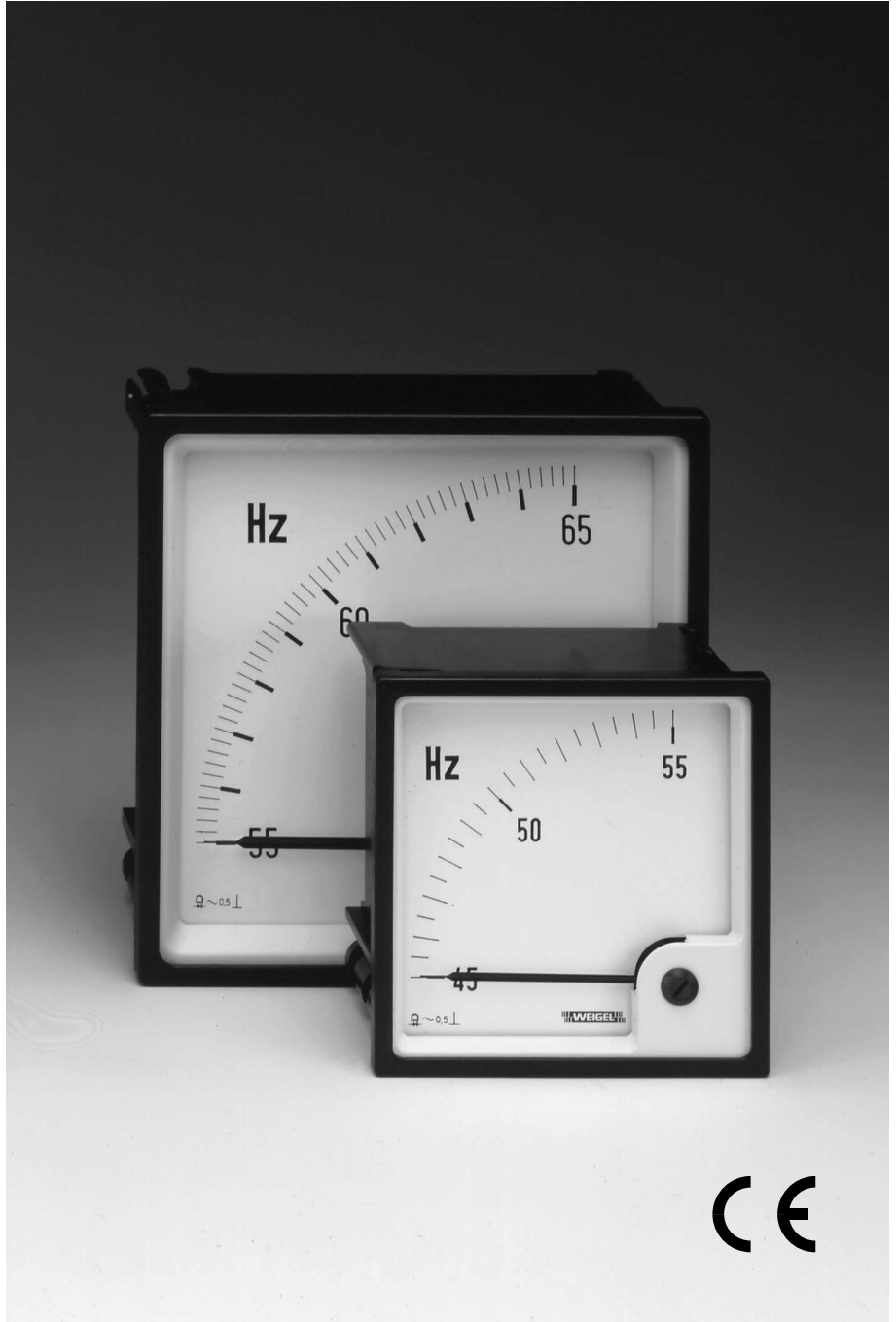
Data Sheet

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



WEIGEL

Application

The pointer - type frequency meters **ZQ 48/72/96/144 K** with 90° dial and **LSZ 96 K** with 240° 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 meters 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	moulded square case suitable to be mounted in control / switchgear panels, machine tool consoles or mosaic panels, stackable			
material of case	polycarbonate thermoplastics, flame retardant with UL rating of 94 V – 0			
material of window	glass ↗			
colour of bezel	black (similar to RAL 9005) ↗			
position of use	vertical ±5° ↗			
panel fixing	screw clamps			
mounting	stackable next to each other			
panel thickness	≤ 40 mm			
terminals	hexagon studs, M4 screws and wire clamps E3			

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
weight approx.	0.13 kg	0.3 kg	0.3 kg	0.3 kg

Electrical Data

measuring unit	frequency
admissible voltage variation	–15% ... +10% of rated 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 accidental contact IP 20 for terminals protected against accidental contact ↗

↗ also refer to "Options"

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 48 K ↗	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 ZQ 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 temperature range	-10 ... +55 °C
storage temperature range	-25 ... +65 °C
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, control 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 (ZQ 48 K)	other rated voltage on request
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)

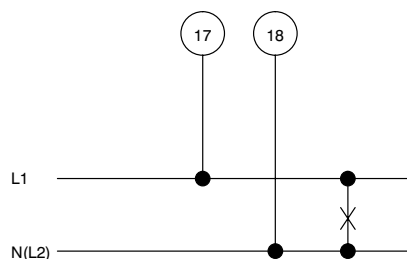
terminal protection against accidental contact

full-sized rear cover or protective sleeves

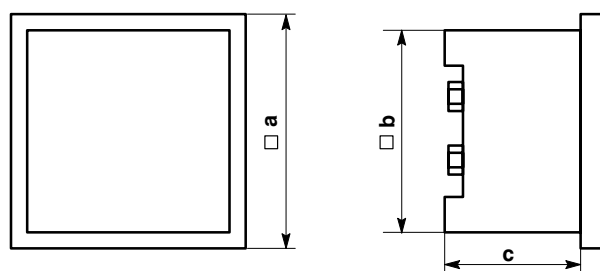
dial

non-calibrated	with dial symbols
blank dial	pencil-marked on initial and end values
scale division and figuring	0 ... 100%
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
a	48	72	96	144
b	42.5	66	90	136
c	53	53	53	53

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⁾

¹⁾ Standard

²⁾ Please clearly add the desired specifications.

³⁾ ZQ 96/144 K only

⁴⁾ ZQ 48/72/96/144 K only

ordering example

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

– specifications subject to change without notice; date of issue 01/11 –

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