



# Data Sheet

M Series  
030.D.101.07

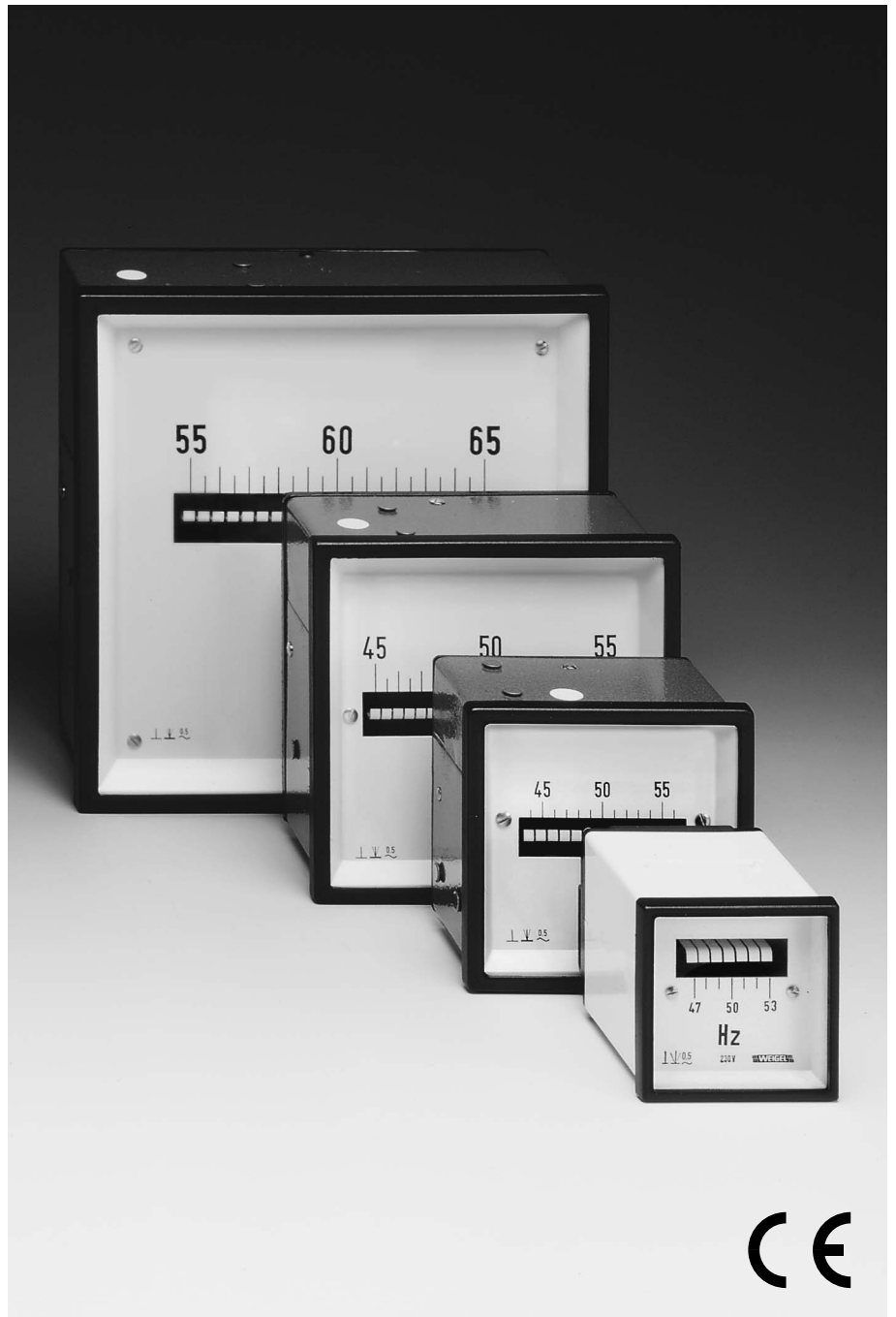
## Frequency Meters with Vibrating Reed Movement

**FQ 48**

**FQ 72**

**FQ 96**

**FQ 144**



**WEIGEL**

## Application

The frequency indicators **FQ 48/72/96/144** (M series) are used to measure frequencies of power supplies and/or generator sets in spans of rated frequencies 50 Hz or 60 Hz.

The indicators are suitable to be mounted in switchboards, generator sets, machine tool consoles or mosaic grid panels.

## Movement

Vibrating reed movement.  
Each reed is tuned to a different value in the frequency span.

## Mechanical Data

case details	square case suitable to be mounted in control / switchgear panels, machine tool consoles or mosaic grid panels, stackable
material of case	thermoplastics, flame retardant (FQ 48) pressed steel (FQ 72/96/144)
material of window	glass ▶
colour of bezel	black (similar to RAL 9005) ▶
position of use	vertical $\pm 5^\circ$ ▶
panel fixing	plate springs (FQ 48) WEIGEL screw clamps (FQ 72/96/144)
panel thickness	1 ... 15 mm
mounting	stackable next to each other
terminals	hexagon studs, M3 x 6 screws and wire clamps C6 ▶ connector blades 6.3 x 0.8 for protective wire (FQ 72 >100V or FQ 96 >500V)

dimensions (in mm)	FQ 48	FQ 72	FQ 96	FQ 144
bezel	□ 48	□ 72	□ 96	□ 144
case	□ 45	□ 66.5	□ 90.5	□ 137
depth	61	52	58	58
panel cutout	□45.2 <sup>+0.3</sup>	□68.3 <sup>+0.4</sup>	□92 <sup>+0.8</sup>	□138 <sup>+1</sup>
weight approx.	0.15 kg	0.3 kg	0.4 kg	0.8 kg

## Electrical Data

measuring unit	frequency
variation permissible	rated voltage $\pm 10\%$
overload capacity (acc. to DIN EN 60 051 - 1) continuously	1.2 times rated voltage
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

▶ for other ratings refer to "Options"

## Measuring Ranges

frequency ranges	resolution	number of reeds	
47 ... 50 ... 53 Hz	1 Hz	7	(FQ 48 only)
47 ... 50 ... 53 Hz	½ Hz	13	(except FQ 48)
44 ... 50 ... 56 Hz	1 Hz	13	(except FQ 48)
45 ... 50 ... 55 Hz	½ Hz	21	(except FQ 48/72)
57 ... 60 ... 63 Hz	1 Hz	7	(FQ 48 only)
57 ... 60 ... 63 Hz	½ Hz	13	(except FQ 48)
54 ... 60 ... 66 Hz	1 Hz	13	(except FQ 48)
55 ... 60 ... 65 Hz	½ Hz	21	(except FQ 48/72)

rated voltage	approx. power consumption	operating voltage			
		FQ 48	FQ 72	FQ 96	FQ 144
100 V	0.4 VA	600 V	600 V	300 V	300 V
110 V	0.5 VA	600 V	600 V	300 V	300 V
230 V	1.0 VA	600 V	600 V	300 V	300 V
400 V	1.5 VA	600 V	600 V	300 V	300 V
500 V	<3 VA	600 V	600 V	300 V	300 V
600 V ▶	<3 VA	600 V	600 V	600 V	600 V

## Scaling

scale division	coarse–fine
reed arrangement	horizontal

## Accuracy at Reference Conditions

accuracy class 0.5 acc. to DIN EN 60 051 - 1

### reference conditions

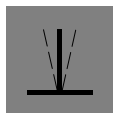
ambient temperature	23°C
position of use	nominal position $\pm 1^\circ$
input	rated measuring value
others	DIN EN 60 051 - 1

### influences

ambient temperature	23°C $\pm 2$ K
position of use	nominal position $\pm 5^\circ$
stray magnetic field	0.5 mT

## Environmental

climatic suitability	climatic class 2 acc. to VDE/VDI 3540 sheet 2 ▶
operating temperature range	-25 ... +40°C ▶
storage temperature range	-25 ... +65°C
relative humidity	$\leq 75\%$ annual average, non–condensing
shock resistance	15 g, 11 ms ▶
vibration resistance	2.5 g, 5 ... 55 Hz ▶



## Frequency Meters with Vibrating Reed Movement

### 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	Safety requirements for electrical measuring, control and laboratory equipment
-1	Part 1: General requirements
-2-030	Part 2-030: Particular requirements for testing and measuring circuits
DIN EN 61 326 - 1	Electrical equipment for measurement, control and laboratory use – EMC requirements Part 1: General requirements
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

#### case

window	non-glaring glass
colour of bezel	gray (similar to RAL 7037)
position of use	to be specified 15° ... 165°
increased mechanical loads	shock 30 g, 11 ms vibration 5 g, 5 ... 55 Hz
climatic suitability	limited use in the tropics climatic class 3 according to VDE/VDI 3540 sheet 2
with operating temperature range	-10 ... +55 °C
marine application	non-certified
enclosure code	IP 54 splash-water protected front

#### dial

additional lettering	to be specified e.g. "generator"
additional figuring	to be specified
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 to be specified

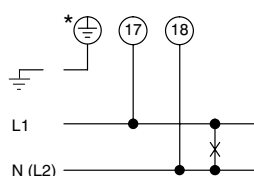
#### measuring ranges

rated voltage	from 57.7 V up to 600 V on request
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#### accessories

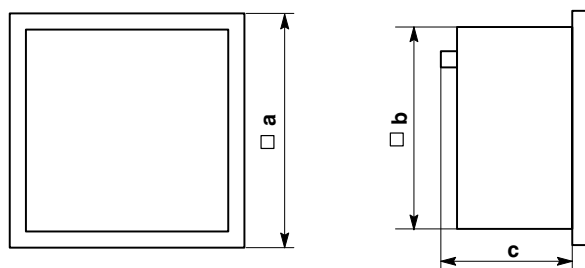
projection mounting outfit	
terminal protection against accidental contact	
full-sized rear cover or protective sleeves SW6	
terminals	connector blades 6.3 x 0.8

### Connections



FQ 72 or FQ 96 >500V

### Dimensions



dimensions (in mm)	FQ 48	FQ 72	FQ 96	FQ 144
a	48	72	96	144
b	45	66.5	90.5	137
c	61	52	58	58

## Ordering Information

<b>type</b> FQ	reed type frequency indicator
<b>front dimensions</b> 48 72 96 144	48 mm x 48 mm 72 mm x 72 mm 96 mm x 96 mm 144 mm x 144 mm
<b>measuring ranges</b>	refer to preceding table
<b>rated voltage</b>	refer to preceding table
<b>window</b>	glass <sup>1)</sup> non-glaring glass
<b>colour of bezel</b>	black (similar to RAL 9005) <sup>1)</sup> gray (similar to RAL 7037)
<b>position of use</b>	vertical <sup>1)</sup> to special order 15 ... 165° <sup>2)</sup>
<b>performance loads</b>	shock 15 g, vibration 2.5 g <sup>1)</sup> shock 30 g, vibration 5 g
<b>climatic suitability</b>	class 2, -25 ... +40°C <sup>1)</sup> class 3, -10 ... +55°C
<b>marine application</b>	none <sup>1)</sup> non-certified
<b>enclosure code</b>	IP 52 <sup>1)</sup> IP 54 splash-water protected front
<b>terminal safety protection</b>	none <sup>1)</sup> full-sized rear cover protective sleeves SW6
<b>terminals</b>	screws M3 x 6 and wire clamps <sup>1)</sup> connector blades 6.3 x 0.8
<b>dial</b>	scale division & measuring range alike <sup>1)</sup> additional lettering to be specified <sup>2)</sup> additional figuring to be specified <sup>2)</sup> coloured marks red, green or blue <sup>2)</sup> coloured sector red, green or blue <sup>2)</sup>
<b>logo</b>	WEIGEL <sup>1)</sup> none OEM logo <sup>2)</sup>

<sup>1)</sup> Standard

<sup>2)</sup> Please clearly add the desired specifications.

### ordering example

FQ 144, measuring range 47 ... 50 ... 53 Hz, 13 reeds,  
rated voltage 230 V AC, window non-glaring glass,  
WEIGEL logo

– specifications subject to change without notice; date of issue 12/15 –

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