



FEATURES:

- Small consumption
- Microprocessor's frequency measuring method
- Power supply from measuring circuit
- Exchangeable dial
- Protective cover for terminals (optional)

OPERATION DESCRIPTION

Pointer frequency meter is designed for measurement of mains voltage frequency within five different measuring ranges (45-55 Hz, 48-52 Hz, 45-65 Hz, etc). Dial has to be exchanged, when the measuring range is changed. Meter consists of: power supply unit, measuring unit with microprocessor and instrument with moving coil. The meter is powered through measuring terminals. One of the following voltage ranges can be used: from 57V to 110V, 230V, 400V, 500V. Voltage range is factory preset according to customer order.

TECHNICAL DATA

ACCURACY:

- All ranges 0.5

MEASURING RANGES:

- According to order:

45 .. 55 Hz
48 .. 52 Hz
45 .. 65 Hz
55 .. 65 Hz
58 .. 62 Hz

INPUT VOLTAGE:

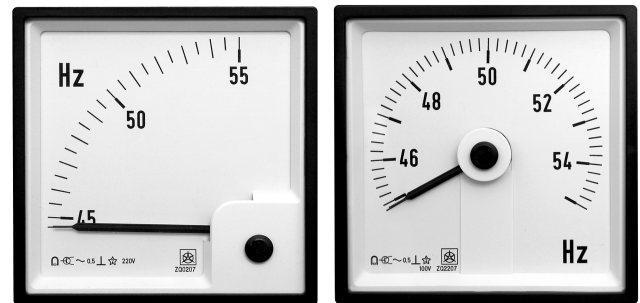
- | | | | | |
|-----------------------------|--|---------------|----------------|----------------|
| • Nominal voltage U_N [V] | 57-110 | 230 | 400 | 500 |
| • Input resistance | 16 k Ω | 80 k Ω | 139 k Ω | 180 k Ω |
| • Power consumption(max) | 1 VA | 1 VA | 1,7 VA | 2 VA |
| • Overload capacity | 1,2 U_N continuously
1,5 U_N up to 2 hours
2 U_N up to 5 seconds | | | |

SAFETY:

- According to standard **SIST EN 601010-1:2002**
- Max. voltage versus ground CAT III, 300Vmax
(at 400V and 500V 300Vmax should be obeyed)

POWER SUPPLY:

- From measuring circuit $U_N \pm 20\%$



Picture 1: Frequency meter ZQ0207, ZQ2207

HOUSING:

- Material of housing: PC non-flammable, according to **UL 94 V-0**
- Enclosure protection: Case IP 52, terminal contacts IP 00 (IP 20 for connection terminals) according to **SIST EN 60529: 1997**

AMBIENT CONDITIONS

- Temperature:

Reference range of operation	+18 ... +28°C
Range of operation	-25 ... +55°C
Storing	-40 ... +70°C
- Humidity up to 80% (without condensing)

DIALS

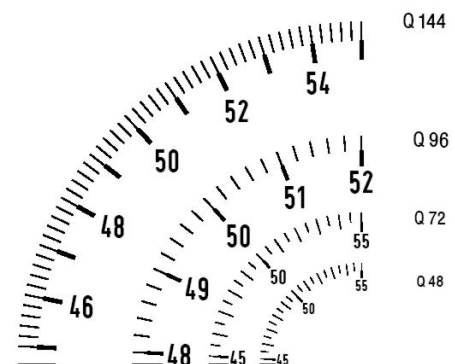


Figure 1: Dial drawing ZQ0x07A

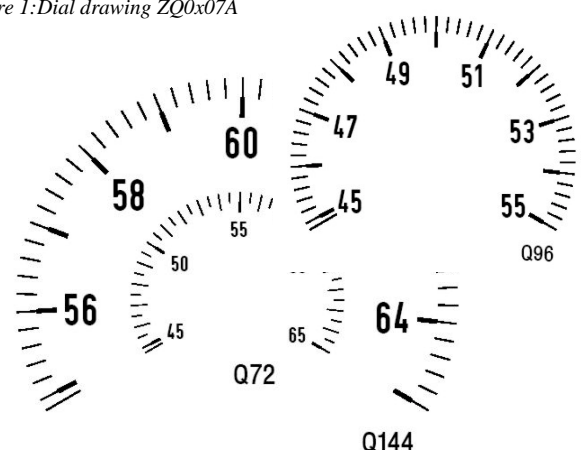


Figure 2: Dial drawing ZQ2x07A

ORDERING INFORMATION

For ordering it is necessary to declare type of the meter, measuring range and nominal voltage.

Basic data:

ZQxx07A - b, c

xx for dimensions and dials' type look table 1

b measuring range (look page 1)

c nominal voltage (look page 1)

Ship version of the instrument must be specified with adding L letter to the type designation (ZQ0207AL for example). Ship version is available only for meters ZQ0107A, ZQ0207A and ZQ0307A.

ORDERING EXAMPLE:

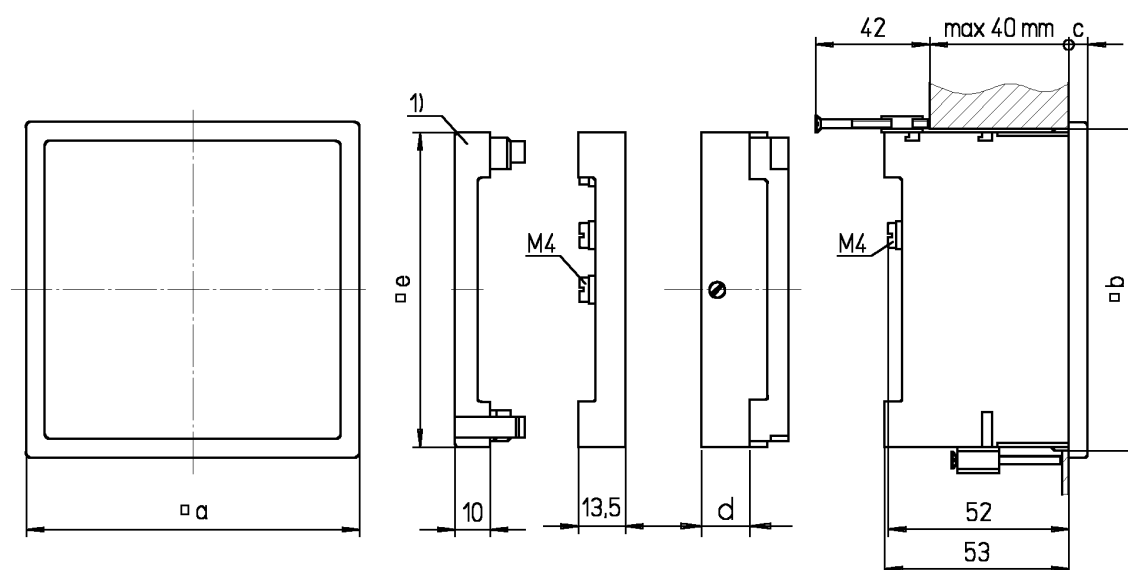
Frequency meter dimensions 96x96, dial type 90°, range 45 to 55 Hz, voltage 230 V, ship version:

ZQ0207AL 45-55 Hz, 230V

SPECIAL VERSION:

- Measuring range according to customer's wish
- Special marks on dial
- Empty dial
- Ship version (only ZQ0107A, ZQ0207A and ZQ0307A)
- Protective cover for protection of connecting terminals

DIMENSIONAL DRAWINGS:



Picture 6: Dimensional drawings ZQ0107A, ZQ0207A, ZQ0307A, ZQ0407A, ZQ2107A, ZQ2207A, ZQ2307A (all dimensions are in mm) – protection cover (option)

Type		ZQ0107	ZQ0207	ZQ0307	ZQ0407	ZQ2107	ZQ2207	ZQ2307
Front frame (mm)	□ a	144	96	72	48	144	96	72
Panel cut-out (mm)	□ b	138 ^{+1,0}	92 ^{+0,8}	68 ^{+0,8}	45 ^{+0,6}	92 ^{+0,8}	138 ^{+1,0}	92 ^{+0,8}
Bezel height (mm)	c	8,0	5,5	5,5	5,0	8,0	5,5	5,5
Base (mm)	□ d	27,3	27,3	27,3	27,3	27,3	27,3	27,3
Protective cover (mm)	□ e	90	90	90	90	240	240	240
Scales length (mm)		135	95	65	41	220	135	101
Dimensions		150x155x80	102x102x75	80x75x75	55x55x75	150x150x137	160x105x102	100x90x120
Weight approximately (kg)		0.40	0.20	0.20	0.16	0.40	0.20	0.20

Table 1: Dimensions and weight



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⚡ ZQ – REED FREQUENCY METERS

FEATURES:

- For measurement frequencies of AC supply
- Range from 45 Hz to 65 Hz
- Good read-out survey on larger distance
- Minimum effect of temperature
- Low power consumption

APPLICATION

The vibrating-reed frequency meter is one of the simplest devices for indicating the frequency of an AC source. They are usually in-circuit meters, used on power panels to monitor the frequency of AC.

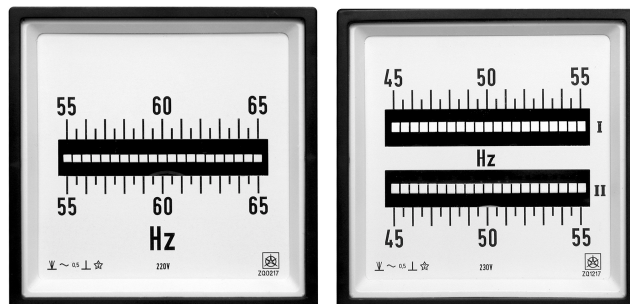
Two-systems reed frequency meters with two rows of reeds and two separate AC voltages can be used to synchronise two generators in parallel.

CONSTRUCTION

The element of these instruments consists of steel reeds, which are in the field of an electromagnet. These reeds vibrate in resonance with the energizing AC of the above electromagnet and are manufactured having 13 or 21 reeds. Only the reed whose natural frequency corresponds with the frequency of the AC supply will vibrate at full amplitude indicating the correct frequency on the dial. Different natural frequency of reeds can be provided by different lengths or like in our instruments where the reeds are the same lengths, but are weighted by different amounts at the top so that they will have different natural rates of vibration. When two reeds show deflection of the same amplitude, the mean between the two gives the correct frequency.

Ship's version

Special "ship version" are delivered for building into ships. These are mechanically resistive instruments which correspond to the rules of construction of sea-going ships. The instrument case is marked by an anchor: ⚓ and a capital letter L at the end of the type designation.



Picture 1: Single and two-systems reed frequency meters ZQ0217 and ZQ1217

TECHNICAL DATA

ACCURACY:

- accuracy class 0,5

DESIGN:

- Material of housing: PC
unflammable, according to **UL 94 V-0**
- Enclosure protection: Case IP 52, terminal contacts IP 00
(IP 20 for connection terminals)
according to **EN 60529: 1989**
- Operating position Vertical
- Test voltage 2 kV rms
according to **EN 61010-1: 1990**
- Consumption: 110V – 230V 0.7 ... 1.2 VA
Other ranges 1.4 ... 2 VA

AMBIENT CONDITIONS JVF (DIN 40 040)

- Climatic conditions: Standards **EN 60051-1: 1995/01**
EN 60051-2: 1984
EN 60051-9: 1988
- Temperature:
 - Reference range of operation +18 ... +28°C
 - Nominal range of operation -25 ... +55°C
 - Storing -40 ... +70°C
- Humidity up to 80% (without condensing)

TYPES OF FREQUENCY METERS:

TYPE			ZQ0317	ZQ0217	ZQ0117
MEASURING RANGE	Voltage (V)	No. of reeds			
47 ... 53 Hz	110, 230	13	•	•	•
	380, 500		•	•	•
57 ... 63 Hz	110, 230	13	•	•	•
	380, 500		•	•	•
45 ... 55 Hz	110, 230	21	-	•	•
	380, 500		-	•	•
55 ... 65 Hz	110, 230	21	-	•	•
	380, 500		-	•	•

Table 1: Single-system reed frequency meters

TYPE			ZQ1217	ZQ1117
MEASURING RANGE	Voltage (V)	No. of reeds		
2 x 47 ... 53 Hz	110, 230	2 x 13	•	•
	380, 500		•	•
2 x 57 ... 63 Hz	110, 230	2 x 13	•	•
	380, 500		•	•
2 x 45 ... 55 Hz	110, 230	2 x 21	•	•
	380, 500		•	•
2 x 55 ... 65 Hz	110, 230	2 x 21	•	•
	380, 500		•	•

Table 2: Two-system reed frequency meters

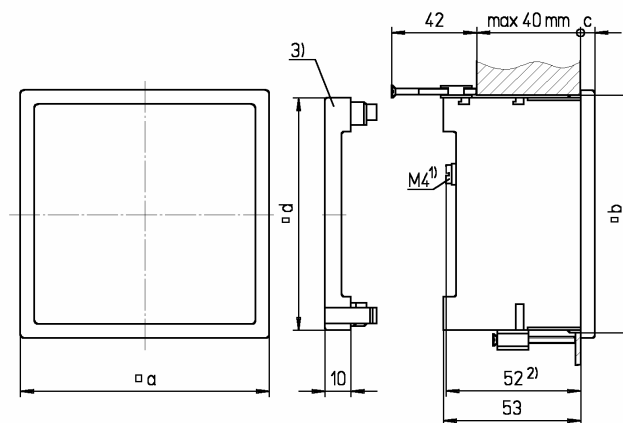
ORDERING DATA:

- Instrument type,
- Measuring range and voltage,
- Number of reeds.

ORDERING EXAMPLE:

- ZQ0217, 55 ... 65 Hz, 110 V, 21
- ZQ1217, 2 x 47 ... 53 Hz, 230V, 2 x 13

DIMENSIONAL DRAWINGS:



Picture 2: Dimensional drawing ZQ0117, ZQ0217, ZQ0317, ZQ1117 and ZQ1217 (all dimensions are in mm)

Type		ZQx117	ZQx217	ZQ0317
Bezel height (mm)	□ a	144	96	72
Panel cut-out (mm)	□ b	138 ^{+1,0}	92 ^{+0,8}	68 ^{+0,8}
Bezel height (mm)	c	8,0	5,5	5,5
Protect cover (mm)	□ d	90	90	66,5

Table 3: Dimensions



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