

Analogue Meters CQ2x07 series

 **CQ - Instruments with a moving coil and a rectifier**
CQ2107, CQ2207, CQ2307 & CQ2407

- For measurement of AC currents and voltages
- Linear scale
- Good read-out survey on larger distance
- Moving-coil Panel instruments with exchangeable scales
- Panel mounted instruments with 240° scale
- Resistance to mechanical vibrations
- Protective cover for terminals

PROPERTIES

- For measurement of AC currents and voltages
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- Moving-coil Panel instruments with exchangeable scales
- Panel mounted instruments with 240° scale
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- Protective cover for terminals (optional)

APPLICATION

Measuring instruments with a moving coil CQ... are intended for measurement of AC currents and voltages in the frequency range 40 ... 65 Hz. Average value of rectified current and voltage is measured. The scale is drawn in r.m.s. values at sine curve form. Distortion and deviation, respectively, from the sine current and voltage forms, entails additional errors.

CONSTRUCTION

The measuring system, made by light and quality materials is not sensitive to external electromagnetic fields and is resistant to mechanical impacts and vibrations. The meters with exchangeable dial and linear 240° scale have the standardised square casing. The scale length is much longer as the pointer is placed in the centre of the instrument.

¹⁾ At reference conditions for size 96x96 (CQ2207) and 144x144 mm (CQ2107) only).

MEASURING RANGE:

MICROAMMETERS:

Measuring range (µA)	100	120	150	200	250	300	400	500	600	800
Voltage drop	1.2 V ... 1.5 V									

MILLIAMMETERS

Measuring rating (mA)	1	1.2	1.5	2	2.5	3	4	5	6	8	10	15	20
Voltage drop	1.2 V ... 1.5 V												

AMMETERS:

Measuring range (A)	$xA / 1 A^{2)}$				$1 A^{3)}$	$xA / 5 A^{2)}$		$5 A^{3)}$	
Consumption	0.1VA				0.1VA	1.3VA		1.3 VA	

VOLTMETERS:

Measuring range (V)	2.5	3	4	5	6	8	10	12	15	20	25	30	40
	50	60	80	100	120	150	200	250	300	/ 100 V ²⁾ / 110 V ²⁾			
Internal resistance	1 kΩ/V												
Measuring range (V)	400											500	600
Internal resistance	4 kΩ/V												

²⁾ For the connection to measuring transformer. State transformer ratio and rating at order. Ammeters CQ2407 are delivered with separated current transformer 1 A/5 mA or 5 A/5 mA.

³⁾ Ammeter with 2, 5 or 6 times overload capacity. When placing the order please specify the range, as well the connection ratio (order example: range 5/10 A, sc.100/200 A).

TECHNICAL DATA

ACCURACY:

Accuracy class	1.5
	(standard)
Accuracy – on request	1.0 ¹⁾
	(optional)

DESIGN:

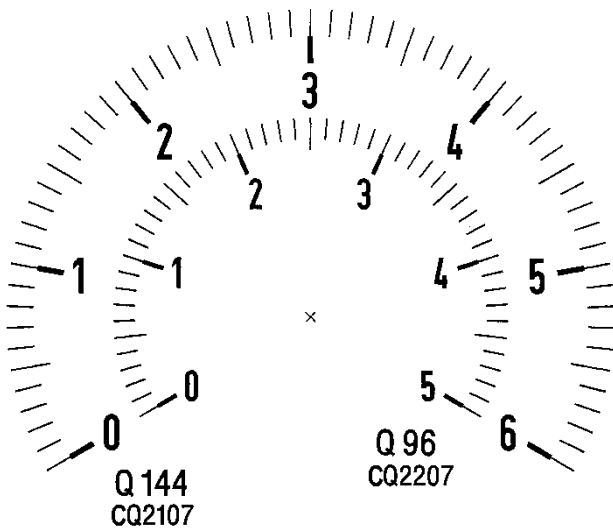
Material of housing:	PC
	unflammable, according to UL 94 V-0
Enclosure protection:	Case IP 52, terminal contacts IP 00
	(IP 20 for connection terminals)
	according to EN 60529
Operating position	Vertical
Installation category (Vrms)	CAT III 600 V

AMBIENT CONDITIONS

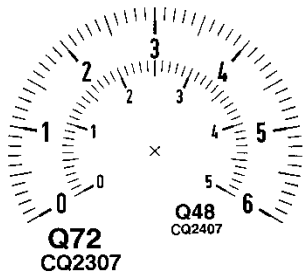
JVF (DIN 40 040)

Climatic conditions:	Standards EN 60051-1
	EN 60051-2
	EN 60051-9
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)

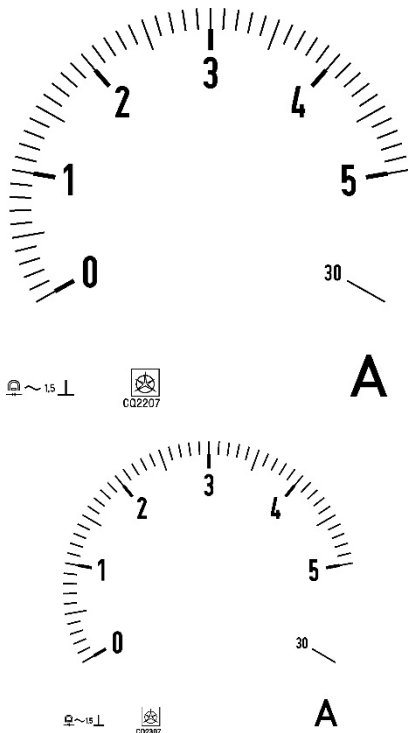
SCALE



Picture 1: Drawing of scale CQ2107, CQ2207



Picture 2: Drawing of scale CQ2307, CQ2407

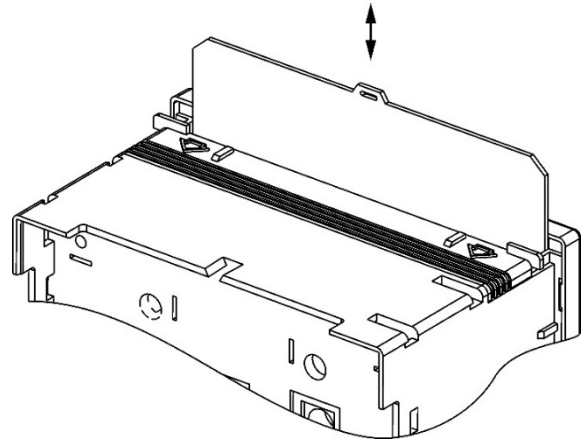


Picture 3: Drawing of scale CQ2207, CQ2307 with overload.

EXCHANGING OF SCALES

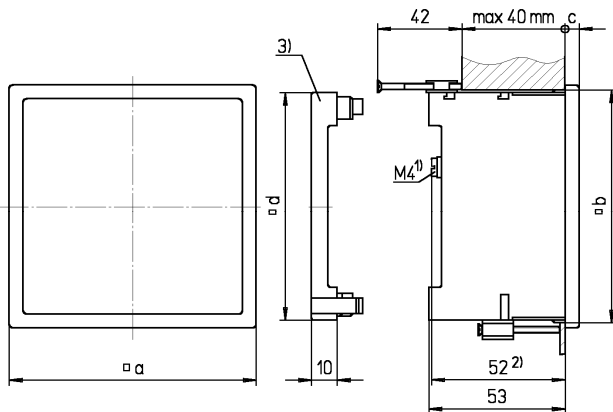
Press the cover, on top of the instrument, in the direction of the arrow and extract the scale with a suitable tool. After exchanging the scale, carefully close the opening with the cover.

The instrument must be disconnected during the dial exchange procedure.

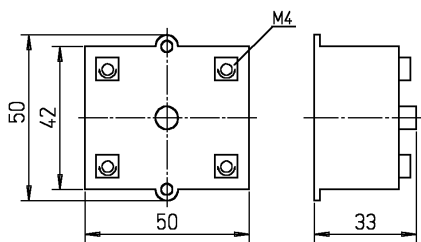


Picture 4: Exchanging of scales

DIMENSIONAL DRAWING



Picture 5: Dimensional drawing CQ2107, CQ2207, CQ2307 and CQ2407 (all dimensions are in mm)



Picture 6: Separated current transformer 1 A/5mA or 5 A/5mA only at CQ2407

DATA FOR ORDERING

State the instrument type designation and rating. In case for connection to the measuring transformer, the transformer ratio should also be stated.

ORDERING EXAMPLE FOR STANDARD VERSION:

- Milliammeter CQ2207, 10 mA
- Voltmeter CQ2307, 120 kV, for the connection to voltage transformer 100/0.1 kV

When ordering scales, state same data as when ordering the instrument.

Type		CQ2107	CQ2207	CQ2307	CQ2407
Bezel (mm)	□ a	144	96	72	48
Panel cut-out (mm)	□ b	138 ^{+1.0}	92 ^{+0.8}	68 ^{+0.8}	45 ^{+0.6}
Bezel height (mm)	c	8.0	5.5	5.5	5.0
Protect cover (mm)	□ d	90	90	66.5	42.5
Scales length (mm)		235	155	113	71
Weight approx. (kg)		0.39	0.25	0.19	0.15

Table 1: Dimensions and weight

WITH CODE:

CQ2307SL_A7D5SAASNSSSYS

CQ2307	Type
S	Class 1.5
L	Left zero position
_A	Unit
7D5	Rating
S	40-65 Hz
A	Standard finish
A	Standard window
S	Standard dial
N	without illuminated
S	Single scale
S	Black zero adjuster
S	Black frame
Y	With protection cover
S	Vertically mounting position

ORDERING CODE

*Standard version.

Type	Class	Zero Position	Unit	Rating	Frequency Range	Finish	Window	Dial	Illuminated Scale	Index Type	Zero Adjuster Colour	Frame Colour	Protection Cover	Mounting Position
CQ2x07	X	X	X	X	X	X	X	X	X	X	X	X	X	X
														A 30° B 60° C 0° - Horizontally S 90° - Vertically * N No Y Yes* S Black * S Black * W White D Double Scale S Single Scale * N No * N Bianco Dial S Standard with Scale * W Black, White Scale X No Dial Y Black, Yellow Scale A Clear Glass * B Clear Glass + Red Adj. Index D Anti-Glare + Red Adj. Index L Anti-Glare Glass P Polycarbonate Panel R Polycarbonate + Red Adj. Index A Standardna * G HVE + IP54 H HVE (Tropical Seal) M Inc. Mech. Resistance P IP54 R Ship Ver. + IP54 S Ship Ver. T Ship Ver. + HVE
														S 40-65 Hz 1 1.2 1.5 2 3 4 5 6 7.5 8 10 12 15 20 25 30 40 50 60 75 80 100 120 150 200 250 300 400 500 600 800 uA rating selection limits 100 ... 800 mA " 1 ... 800 _A " 1 ... 7.5 _V " 2.5 ... 600
														Left Hand Zero * H cl. 1 S cl. 1.5 *

- CQ0107** Front frame (mm) 144x144
- CQ0207** Front frame (mm) 96x96
- CQ0307** Front frame (mm) 72x72
- CQ0407** Front frame (mm) 48x48

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