



## DATA SHEET

# EQ48, EQ72, EQ96 and EQ144

## Voltmeters and Ammeters

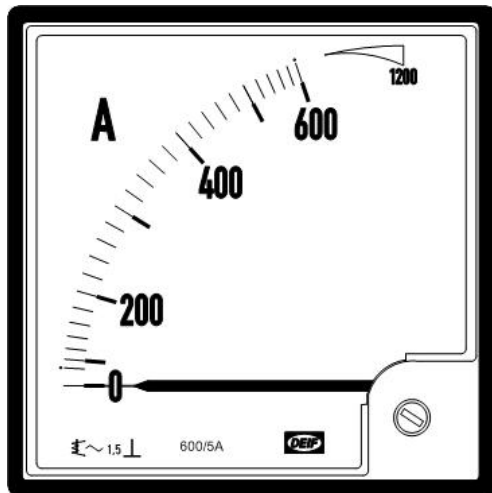
### Moving iron



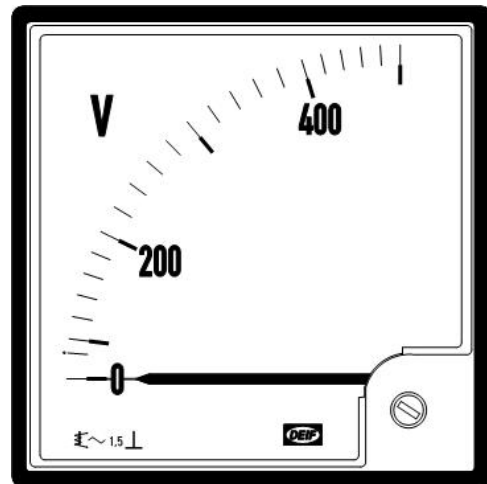
### **Application**

Moving-iron instruments are intended for installation in panels of power distribution or wherever AC current or AC voltages are to be measured.

The EQ measures R.M.S. values in frequency range 16 to 65 Hz (possible calibration for other frequency ranges).



Example: standard EQ96, 0-600/5 A (CT)



Example standard EQ96, 0-500 V

### **Available variants**

#### **Standard variants**

Standard variants have fixed measuring ranges and scales. Neither customisation nor options are possible.

#### **Custom variants**

If you require ranges or scale designs outside our standard program, then you must select a custom variant. Custom variants will be customised on customer request.

## Standard variants

## AC voltmeters – direct measurement

Range:	EQ48	EQ72	EQ96	EQ144
0-40 V	x	x	x	x
0-60 V	x	x	x	x
0-100 V	x	x	x	x
0-110 V	x	x	x	x
0-150 V	x	x	x	x
0-250 V	x	x	x	x
0-300 V	x	x	x	x
0-400 V	x	x	x	x
0-500 V	x	x	x	x
0-600 V		x	x	x

AC ammeters – direct measurement  
(2 times overload)

Range:	EQ48	EQ72	EQ96	EQ144
0-1 A	x	x	x	x
0-1.5 A	x	x	x	x
0-2.5 A	x	x	x	x
0-4 A	x	x	x	x
0-5 A	x	x	X	x
0-6 A	x	x	X	x
0-10 A	x	x	X	x
0-15 A	x	x	X	x
0-25 A	X	X	X	x
0-40 A	X	X	X	x
0-60 A		X	X	x

AC ammeters -/1 A CT  
(2 times overload)

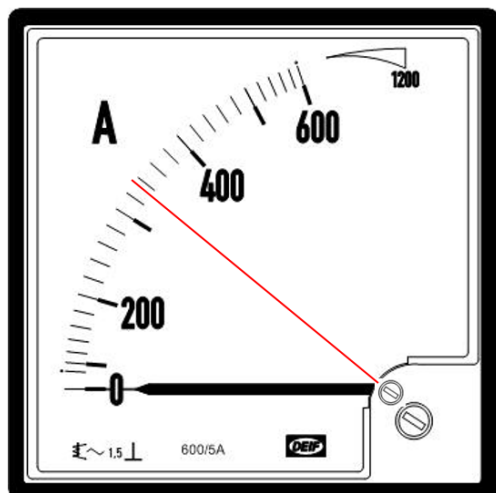
Range:	EQ48	EQ72	EQ96	EQ144
0-10 A	x	x	x	x
0-15 A	x	x	x	x
0-25 A	x	x	x	x
0-40 A	x	x	x	x
0-50 A	x	x	x	x
0-100 A	x	x	x	x
0-150 A	x	x	x	x
0-200 A	x	x	x	x
0-250 A	x	x	x	x
0-300 A	x	x	x	x
0-400 A	x	x	x	x
0-500 A	x	x	x	x
0-600 A	x	x	x	x
0-800 A	x	x	x	x
0-1000 A	x	x	x	x
0-2000 A	x	x	x	x

AC ammeters -/5 A CT  
(2 times overload)

Range:	EQ48	EQ72	EQ96	EQ144
0-10 A	x	x	x	x
0-15 A	x	x	x	x
0-25 A	x	x	x	x
0-40 A	x	x	x	x
0-50 A	x	x	x	x
0-100 A	x	x	x	x
0-150 A	x	x	x	x
0-200 A	x	x	x	x
0-250 A	x	x	x	x
0-300 A	x	x	x	x
0-400 A	x	x	x	x
0-500 A	x	x	x	x
0-600 A	x	x	x	x
0-800 A	x	x	X	x
0-1000 A	x	x	X	x
0-2000 A	x	x	X	x

**Custom variants**

<b>Options</b>	Anti-glare glass
	Glass with red adjustable pointer (IP52 only)
	IP54 protection including sealing and rubber gasket
	Calibration certificate
	Specific mounting angle
<b>Scale design</b>	Optional graphics <ul style="list-style-type: none"> <li>- Coloured lines (red, green, yellow)</li> <li>- Coloured section (red, yellow, green)</li> <li>- Coloured figures (red, green, yellow)</li> <li>- Application text (black, red, green, yellow)</li> <li>- Ammeters' overload range: 3, 4, 5 or 6 times overload</li> </ul>
	New scale design
<b>Measurement</b>	Non-standard voltage measuring range (within data sheet limits)
	Adjusted for DC measurement for moving iron instrument
	Adjusted to specific frequency voltage input only (100 to 500 Hz)

**Adjustable red pointer**

Example: standard EQ96, 0-600/5 A (CT) user-adjustable pointer. This pointer limits the front protection to IP52.

**Optional IP54 protection**

This includes special sealing of the housing and a fitting gasket. The gasket itself is not enough to secure IP54 protection.

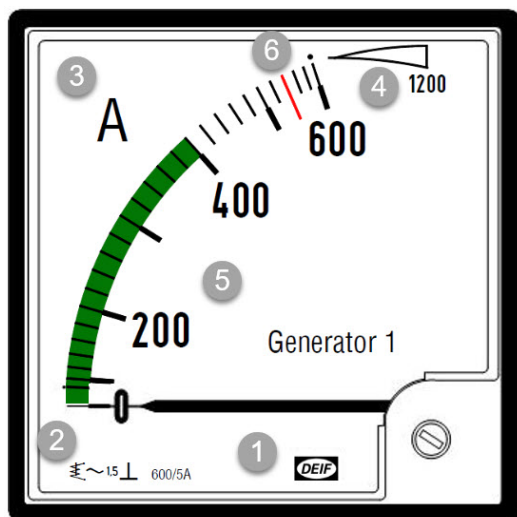
IP54 protection includes sealing and rubber gasket.

## Scale design

## Optional graphics

A scale design is made with the following elements:

1. Logo
2. Symbols
3. Measurement type
4. Measurement area and overload
5. Graphic elements (extra text, coloured marking)
6. Other graphical elements (red line)



## New scale design

Typically, this is for customers who need their own specific scale design or/and a design that differentiates from the DIN standard. The design is stored in the DEIF database and ensures that orders can easily be repeated.

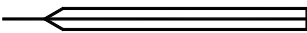
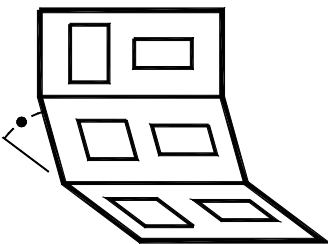
## Separate scales

As the scales are user-changeable, separate scales can be ordered separately if needed.

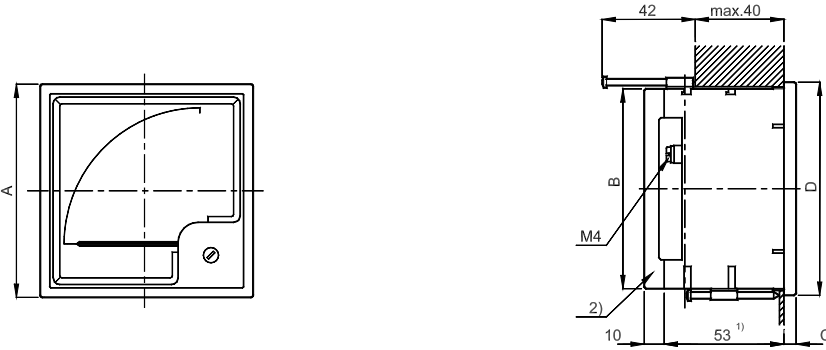
## Technical specifications

EQ					Standards
Type:	EQ48	EQ72	EQ96	EQ144	
Measuring voltage:	Up to 300 V AC (500 A AC <sup>1</sup> )	Up to 800 V AC			DIN 43700
		Standard ranges: up to 600 V (see standard variants)			
		For voltage transformer: -/100 V or -/110 V AC			
Burden:	Approx.: 1.5 to 4 VA				
Measuring current:	Up to 40 A AC	Up to 60 A AC			
		Direct measurement: up to 60 A AC (see standard variants)			
		For current transformer: -/1 A or -/5 A AC (see standard variants)			
Burden:	Approx.: 0.5 to 1.2 VA				
Frequency range:	16-65 Hz. Calibration for other frequency ranges (see options)				
Overload:	Continuous: I <sub>N</sub> x 1.2, short time: I <sub>N</sub> x 5 for 5 sec. I <sub>N</sub> x 10 for 0.5 sec.			EN60051-2	
Accuracy:	Class 1.5 (-10 to <u>15 to 30 to 55</u> °C)			EN 60051	
	Linear scale: ±1.5 % of full scale (FS)		Non-linear scale: ±1.5 % of scale length		

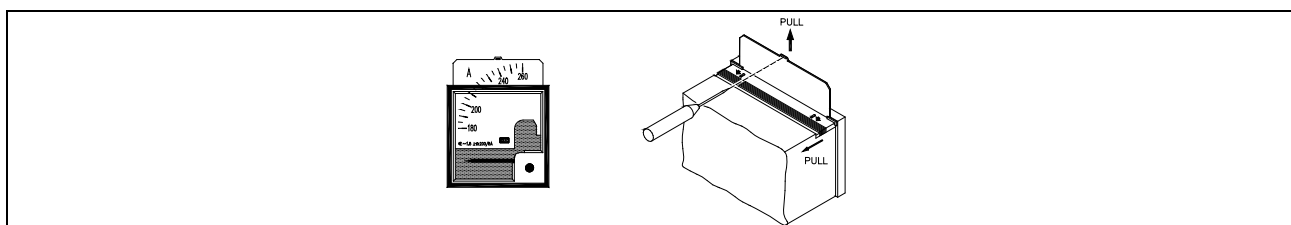
1: Safety: Cat. III 300 V AC/Cat. II 600 V AC

Instruments are designed according to below mentioned standards					Standards
Sizes:	Q48	Q72	Q96	Q144	DIN 43700
	48 x 48 mm	72 x 72 mm	96 x 96 mm	144 x 144 mm	
Scale length -x :	41 mm	62 mm	92 mm	135 mm	
Bezels	Slim bezels				DIN 43718
Scale/pointer			Standard pointer		DIN 43802
Mounting angle	Standard:		Vertical (90 ±5°)		DIN 16257
	Other angles:		Specify angle to horizontal		
			⊥ vertical mounting		
			∠60° 60° to horizontal (e.g.)		
		∥ horizontal mounting			
For edgewise instruments only, furthermore specify: Horizontal or vertical scale					
Measuring ranges	Others on request.				DIN 43701
Protection	Standard version		IP54 version*		*) Marked with label: "IP54 from front only when rubber gasket is mounted"
(Housings)	From front	From rear	From front	From rear	
	IP52	IP52	IP54	IP52	
(Terminals)	Quadratic	Edgewise	Quadratic	Edgewise	
	IP20	IP00	IP20	IP00	EN 60529
Climate	Class HUE, short-term condensing allowed Max. 95 % RH: Max. 30 days per year Max. 85 % RH: Remaining days Max. 75 % RH: Average per year				DIN 40040
Temperature	-10 to 55°C (nominal) -25 to 60°C (operating) -25 to 65°C (storage)				EN 60051
Panel influence	The accuracy is affected neither by the material nor by the thickness of the panel				EN 60051
Shock test	15 g - 6 times - 3 directions 50 g/6 ms 22 g/20 ms				IEC 68-2-27, Test: Ea
Vibrations	3-13.2 Hz: 3 mm 13.2-100 Hz: 1 g				GL + LR: Test 1 DNV: Class A
Materials	All plastic materials are self-extinguishing				UL94 (V0)
Safety	For detailed information: please see the individual types Pollution deg. 2 Quadratic instruments are supplied with protective cover fitted over terminals				EN 61010-1
EMC	CE-classified for residential, commercial and light industry plus industrial environment				EN 61000-6-3/4 EN 61000-6-1/2

## Dimensional details

 <p>1) For range 15...40 A = 59 mm 2) Protective cover</p>						
Type:	A:	B:	C:	Panel cut-out:	Weight (approx.):	Shipping weight:
EQ48	48 x 48 mm	42.8 x 48.8 mm	5.0 mm	45 x 45 +0.3 mm	0.090 kg	0.100 kg
EQ72	72 x 72 mm	66.5 x 66.5 mm	5.5 mm	68 x 68 +0.4 mm	0.200 kg	0.220 kg
EQ96	96 x 96 mm	90.0 x 90.0 mm	5.5 mm	92 x 92 +0.4 mm	0.210 kg	0.230 kg
EQ144	144 x 144 mm	136.0 x 136.0 mm	8.0 mm	138 x 138 +0.5 mm	0.350 kg	0.370 kg

## Exchange of scale



- 1) Press cover at top of instrument as shown.
- 2) Remove scale by means of a suitable tool (for example a screwdriver).
- 3) After exchange of scale: refit cover (press till it snaps into place). Calibration is not needed.

**Note:** Interrupt signal to terminals before exchanging the scale.

## Available variants

Item no.	Variant no.	Variant description
2961111420	07	EQ144-x (90°). Standard voltage and current input including standard scale.
2961111420	08	EQ144-x (90°). Customised voltage and current input including scale.
2961110420	07	EQ48-x (90°). Current /1A or /5A CT without scale.
2961110420	08	EQ48-x (90°). Standard voltage and current input including standard scale.
2961110420	09	EQ48-x (90°). Customised voltage and current input including scale.
2961110720	07	EQ72-x (90°). Current /1A or /5A CT without scale.
2961110720	08	EQ72-x (90°). Standard voltage and current input including standard scale.
2961110720	09	EQ72-x (90°). Customised voltage and current input including scale.
2961110920	07	EQ96-x (90°). Current /1A or /5A CT without scale.
2961110920	08	EQ96-x (90°). Standard voltage and current input including standard scale.
2961110920	09	EQ96-x (90°). Customised voltage and current input including scale.

**Order specifications**

Variants:

Mandatory information						Additional options to the standard variant	
Item no.	Type	Variant no.	Measuring range	Scale	VT primary/secondary	Option	Option

Example:

Mandatory information						Additional options to the standard variant	
Item no.	Type	Variant no.	Measuring range	Scale	VT primary/secondary	Option	Option
2961110420-08	EQ48-x	08	0 to 400 V	0 to 400 V AC			
2961110920-09	EQ96-x	09	CT 500/5 A	0 to 500 A AC (x2)		IP54	Antiglare glass
2961110920-09	EQ96-x	09	(Determined by DEIF)	0 to 12 kV AC	11 kV/120 V AC	Red line at 10.5 kV	

Note: When ordering an EQ meter for connection via a voltage transformer (VT), both primary and secondary of the VT must be stated as shown above.

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