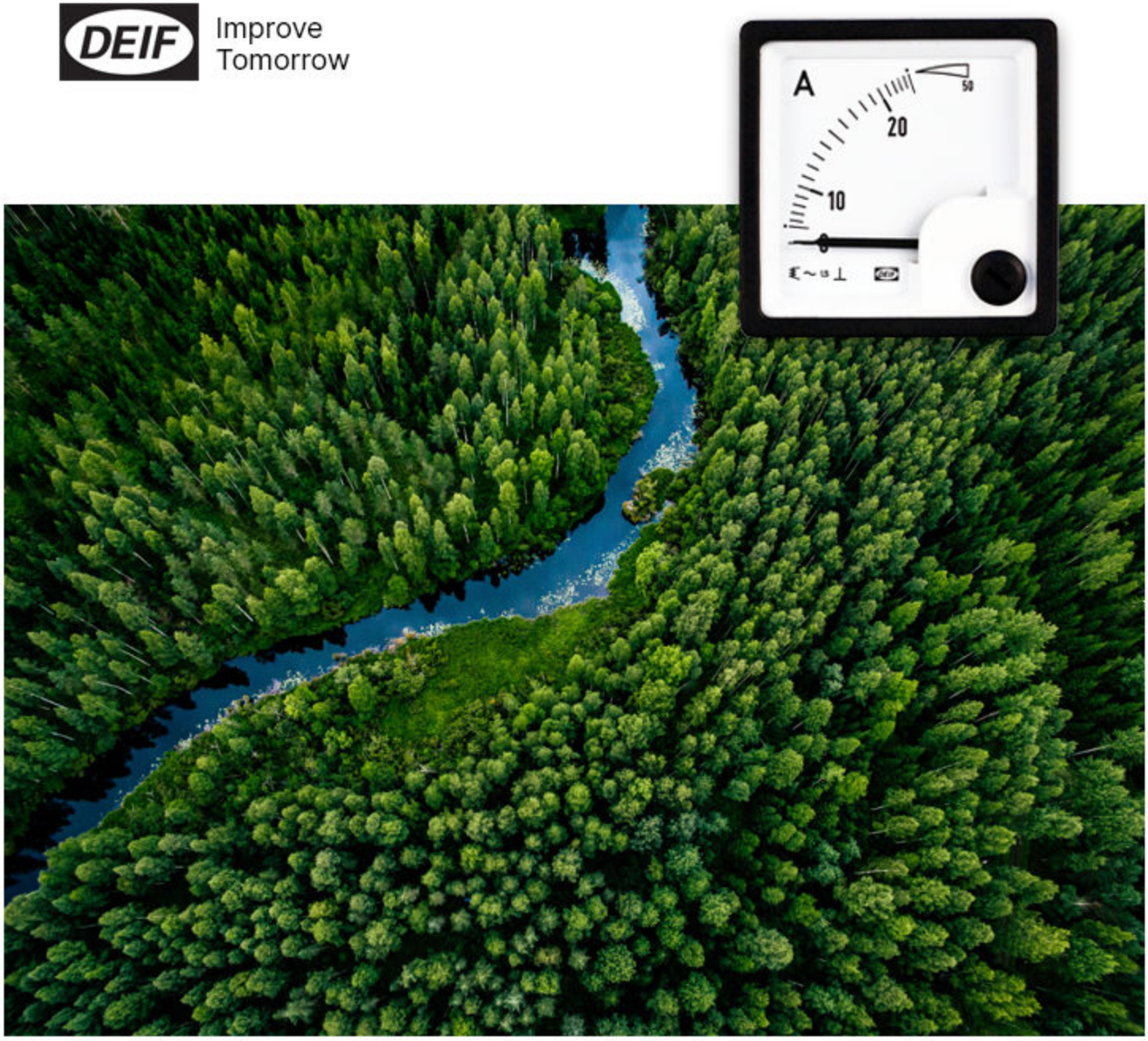
EQ

4921210163E

Voltmeters and ammeters, moving iron

Data sheet

DEIF Improve Tomorrow



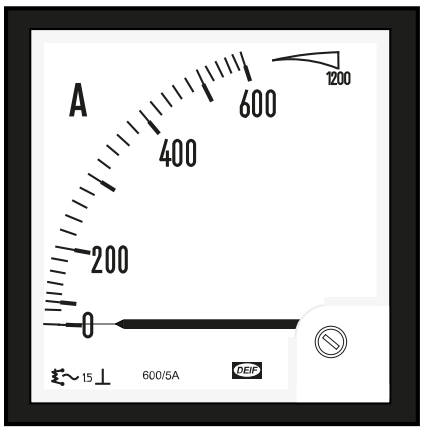
1. About the EQ

1.1 Application

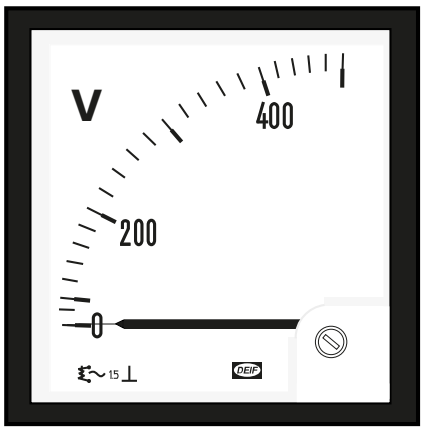
The moving-iron instruments are designed for installation in panels of power distribution or applications where AC currents or voltages need to be measured.

The EQ comes in standard DIN sizes with changeable scales. It has an accuracy class of 1.5.

Use the EQ to accurately measure RMS frequency values between 16 to 65 Hz. It is also possible to calibrate other frequency values.



Standard EQ96, 0 to 600/ 5 A (CT)



Standard EQ96, 0 to 500 V

1.2 Variants

1.2.1 Standard variants

The standard variants come with fixed measuring ranges and scales. It is not possible to customise or add options to these variants.

AC voltmeters, direct measurement

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

AC ammeters, direct measurement (2 times overload)

Range	EQ48	EQ72	EQ96	EQ144
0 to 1 A	●	●	●	●
0 to 1.5 A	●	●	●	●
0 to 2.5 A	●	●	●	●
0 to 4 A	●	●	●	●
0 to 5 A	●	●	●	●
0 to 6 A	●	●	●	●
0 to 10 A	●	●	●	●
0 to 15 A	●	●	●	●
0 to 25 A	●	●	●	●
0 to 40 A	●	●	●	●
0 to 60 A	-	●	●	●

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

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

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

Range	EQ48	EQ72	EQ96	EQ144
0 to 10 A	●	●	●	●
0 to 15 A	●	●	●	●
0 to 25 A	●	●	●	●
0 to 40 A	●	●	●	●
0 to 50 A	●	●	●	●
0 to 100 A	●	●	●	●

Range	EQ48	EQ72	EQ96	EQ144
0 to 150 A	●	●	●	●
0 to 200 A	●	●	●	●
0 to 250 A	●	●	●	●
0 to 300 A	●	●	●	●
0 to 400 A	●	●	●	●
0 to 500 A	●	●	●	●
0 to 600 A	●	●	●	●
0 to 800 A	●	●	●	●
0 to 1000 A	●	●	●	●
0 to 2000 A	●	●	●	●

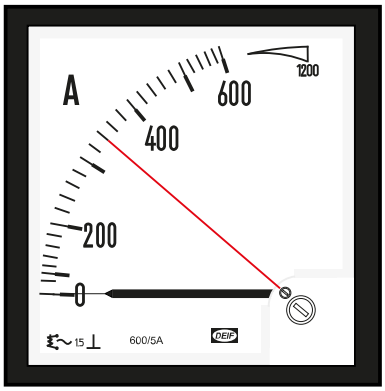
1.2.2 Custom variants

Options

Anti-glare glass
IP54 (front of instrument and when installed with rubber gasket)*
Adjustable red pointer (IP52 only)
Calibration certificate
Specific mounting angle

NOTE * The IP54 protections includes special sealing of the housing and a fitting gasket. The gasket in it self is not enough to comply with IP54 protection requirements.

Example: Adjustable red pointer for standard EQ96, 0 to 600/5 A (CT)



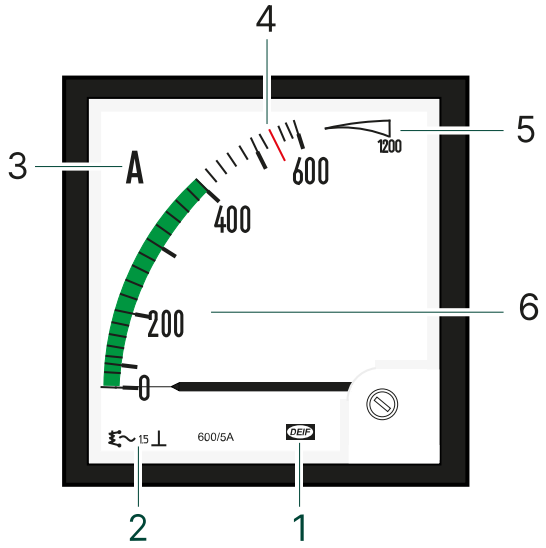
It is only possible to have IP52 front protection with an adjustable red pointer.

Scale design

Optional graphics: • Coloured lines (red, green, yellow) • Coloured sections (red, green, yellow) • Coloured figures (red, green, yellow) • Application text (black, red, green, yellow) • Overload range for ammeters: 3, 4, 5, or 6 times overload
New scale design

A new scale design is typically for customers who needs their own specific scale design or a design that is different from the DIN standard. The designs are stored in the DEIF database. You can order scales separately if necessary.

Example: Scale design



A scale design consists of these elements:

1. Logo
2. Symbols
3. Measurement type
4. Graphical elements, for example red line
5. Measurement area and overload
6. Graphic elements, for example extra text and coloured markings

Measurement

Customised voltage measuring range (within the limits stated in this data sheet)
Adjusted to specific frequency voltage input only (100 to 500 Hz)

2. Technical specifications

2.1 Electrical specifications

Specifications	EQ48	EQ72	EQ96	EQ144
Measuring voltage*	Up to 300 V AC (500 A AC**)	Up to 800 V AC		
Measuring voltage, standard ranges*	Up to 600 V			
Measuring voltage, voltage transformers*	-/100 V or -/110 V AC			
Burden, voltage measuring*	Approximately 1.5 to 4 VA			
Measuring current*	Up to 40 A AC	Up to 60 A AC		
Measuring current, direct measurements*	Up to 60 A AC			
Measuring current, current transformers*	-/1 A or -/5 A AC			
Burden, current measuring*	Approximately 0.5 to 1.2 VA			
Frequency	16 to 65 Hz. Calibration for other frequency ranges is possible (see **Options** for more information).			
Overload	Continuous: I_N x 1.2 Short time: I_N x 5 for 5 seconds I_N x 10 for 0.5 seconds To EN60051-2			
Accuracy	Class 1.5 (-10 to +15 °C to +30 to +55 °C) Linear scale: ±1.5 % of full scale (FS) To EN 60051		Class 1.5 (-10 to +15 °C to +30 to +55 °C) Non-linear scale: ±1.5 % of scale length To EN 60051	
Bezels	Slim bezels To DIN 43718			
Scale/pointer	Standard pointer To DIN 43802			
Mounting angle	**Standard** Vertical (90° ±5°) **Other angles** • Horizontal mounting • 60° to horizontal To DIN 16257			
Measuring ranges	Others are available upon request. To DIN 43701			

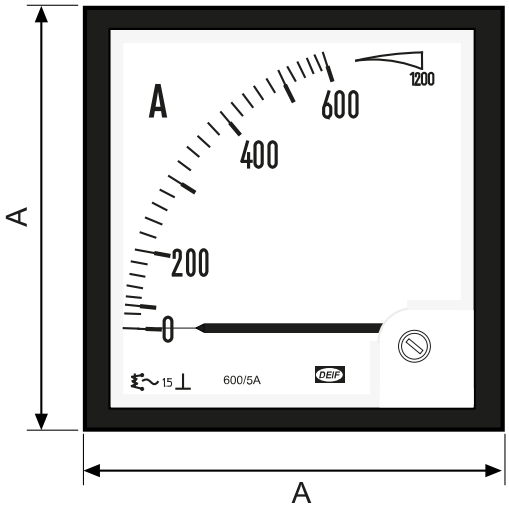
NOTE * To DIN 43700
NOTE ** Safety: Cat. III 300 V AC/ Cat. II 600 V AC

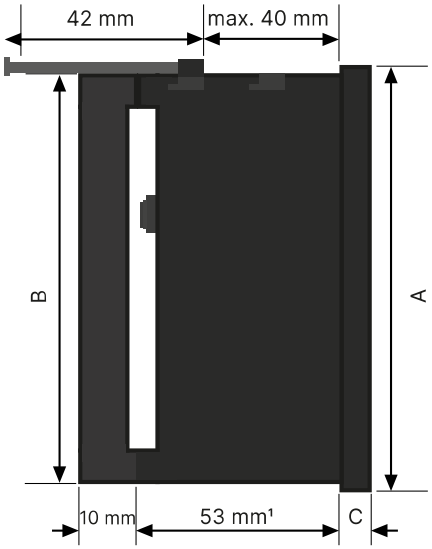
2.2 Environmental specifications

Specifications	EQ48	EQ72	EQ96	EQ144
Nominal temperature	-10 to +55 °C*			
Operating temperature	-25 to +60 °C*			
Storage temperature	-25 to +65 °C*			
Relative humidity	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 To DIN 40040			
Panel influence	The accuracy is not affected by the material or the thickness of the panel. *			
Shock	15 g, 6 times, 3 directions 50 g/6 ms 22 g/20 ms To IEC 68-2-27, Test: Ea			
Vibrations	3 to 13.2 Hz: 3mm 13.2 to 100 Hz: 1g GL and LR: Test 1 DNV: Class A			
Materials	All plastic materials are self-extinguishing UL94 (V0)			
Safety	To IEC/EN 61010-1, installation category III, 300 V, pollution degree 2	To IEC/EN 61010-1, installation category III, 600 V, pollution degree 2		
EMC	To IEC/EN 61000-6-1/2/3 CE classified for residential, commercial and light industry plus industrial environment.			
Protections	**Front** IP52 (IP54 available ***) **Rear** IP52 **Terminals (quadratic)** IP20 EN 60529			

NOTE * To EN 60051
NOTE ** Marked on the label: IP54 for front of instrument only when rubber gasket is mounted.

2.3 Dimensions and weight





NOTE 1) For range 15 to 40 A, this length is 59 mm.
NOTE M4 screws are used in the DQ meter.

Dimensions

Type	Dimensions		
	A	B	C
EQ48	48 mm	42.8 mm	5 mm
EQ72	72 mm	66.5 mm	5.5 mm
EQ96	96 mm	90 mm	5.5 mm
EQ144	144 mm	136 mm	8 mm

Panel cut-out

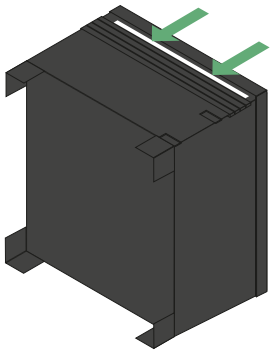
Type	Dimensions
EQ48	45 mm x 45 mm + 0.3
EQ72	68 mm x 68 mm + 0.4
EQ96	92 mm x 92 mm + 0.4
EQ144	138 mm x 138 mm + 0.5

Weight

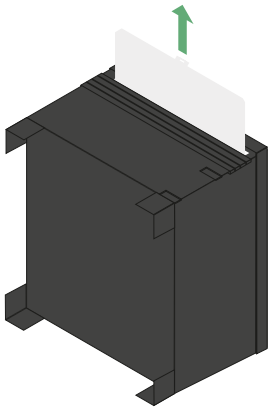
Type	Weight	Shipping weight
EQ48	90 g	100 g
EQ72	200 g	220 g
EQ96	210 g	230 g
EQ144	350 g	370 g

2.3.1 How to change the scale

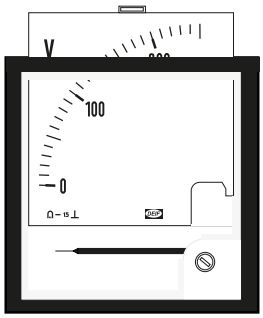
NOTE You must interrupt the signal before you remove the scale.

1. 

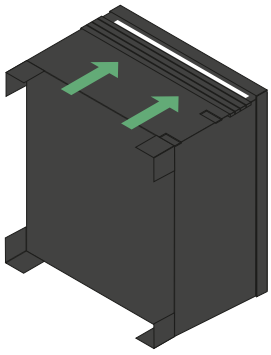
   There is a moveable panel on top of the instrument behind the display. Pull this panel away from the front of the instrument to access the scale.

2. 

   Use a suitable tool to pull out the scale, for example, a screwdriver.

3. 

   Insert a new scale into the open slot.

4. 

   Push the panel back towards the front of the instrument until it clicks into place.

You do not need to calibrate the instrument after you have removed the scale.

3. Ordering

3.1 Available variants

Item no.	Variant no.	Variant description
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	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	08	EQ96-x (90°). Standard voltage and current input including standard scale.
2961110920	09	EQ96-x (90°). Customised voltage and current input including scale.
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.

3.2 Order specifications

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

Ordering 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 (x 2)		IP54	Anti-glare 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 you order an EQ meter for connection via a voltage transformer (VT), both primary and secondary of the VT must be stated as shown in the ordering example above.