Technical Features

Unless another indication in the instrument, the following specification apply:

Accuracy (according to IEC 60051 and UNE-EN 60051)

Class: as marked on the scale

The accuracy class of an analogue measuring instrument indicates the maximun error expresed in percentage of the full-scale value for any measurement made under the so-called reference conditions. Thus, a 500V voltmeter of class index 1.5 guarantees tha its maximun error will be 7,5 V.

Electrical:

Overload (according IEC 60051 and UNE-EN 60051)

- Continuous overload: 1,2 times rated value
- Voltmeters and frequency meters: 2 times Un, 5 seconds (EQ: máx 100 V)
- Ammeters:
  10 times In, 1 second for BIQ and BOQ
  10 times In, 5 seconds
  (máx. 200 A for EQ48n, 250 A for other EQ)
  Maximum voltage related to earth (according to IEC and UNE-EN61010-1)
- EQ72n, EQ96n, EQ144n, PQ72n, PQ96n, PQ144n:
  600V, measurment category II
- Other instruments: 600V, category II / 300V, category III

Power consumption:

- EQ..n: EQ Ammeter < 15 VA ; < 0.5 VA / > 15 A ; 0.8VA
  EQ Voltmeter < 4.5 VA
- PQ..n: Voltmeters: Current 1 mA for ranges up to 1000 V
  Ammeters: Voltage drop 60 mV for ranges up to 100 A
- PR..n: Voltmeters < 1 VA
- FA..n: < 7 VA
- BIQ..n: < 2.5 VA
- BOQ..n: < 3.4 VA
- PAQ..n: Voltmeters: Current 1 mA for ranges up to 1000 V
  Ammeters: Voltage 60 mV for ranges up to 100 A
- FAG..n: < 7 VA

Constructive:

Housings according to DIN IEC 61554, in V0 self-extinguishing thermoplastic material according to UL 94.

Grado de protección parte frontal (según IEC y EN 60529)

- BIQ..n y BOQ..n: IP40
- Other instruments: IP52 - Standard execution
  IP54 -Tropical version

Environmental

This instrument is suitable for indoor installations with the following characteristics.

Operation temperature:	-10 ... 55 ° C
Storage temperature:	-25 ... 65 ° C
Reference temperature:	23 ° C
Maximum relative humidity:	80% up to 31°C, decreasing linearly up to 50% at 40°C, and to 25% at 55°C
Altitude:	up to 2000m
Pollution degree:	II (according IEC 61010-1 and UNE-EN 61010-1)
Vibration resistance:	1,5 g a 50 Hz (10-150-10 Hz / 0,15 mm)
Shock resistance:	15 g 11 ms

Housing

Unless otherwise indicated, the housings are flush mounting into panels according to DIN 43718 standard, sizes 48x48, 72x72, 96x96 y 144x144. Made of self-extinguishing plastic material V0 according to UL-94.

The window is made of glass. As special executions it can be anti-reflexive glass or unbreakable polycarbonate.

Degree of protection

IP 52 for EQ/PQ/FA housing front
IP 40 for BIQ/BOQ housing front
IP 00 for clamps without electric shock protection
IP 10 for clamps with fixing electric shock protection
(except for 48 and EQ/PQ aminstruments higher than 6A)
IP 20 for clamps with electric shock protection

Bezel according to DIN 43718

Narrow bezel , black colour, similar to RAL 9005.

Fixing

Instruments 48n:	2x grip screw
Instruments 72n and 96n:	2x snap closure (plastic clamp)
Instruments 144n:	4x grip screw

Insulation

The nominal circuit voltage (circuit insulation voltage) of measuring instruments is 650 V, withstanding a test voltage of 2 kV , at 50Hz during 1 minute.

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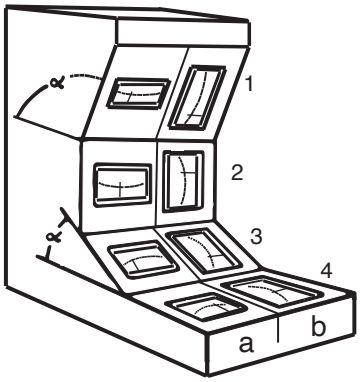
Position

The standard mounting position is standard. The instruments are calibrated - if not indicated differently - for vertical purpose (pos.2). If other mountin positios are required (horizontal or inclined), please indicate the angle of inclination (see figure).



1	∝ > 90°
2	⊥ = 90°
3	∝ < 90°
4	⌐ = 0°

Scales and Pointers

The scales are made with coarse-fine graduation, according to DIN 43802, in black on white ground. In the drawing, scales are shown for the standard measuring ranges, depending on the scale length. Other divisions, coloured strokes or stripes, additional lettering, double scales, scales with double numbering or executions of the scales and mark in white or yellow on black ground can be made as well as special executions.

The pointers have the same colour as the scale (black), except for maximum demand indicators. For making a determined value on the scale by the user, we provide instruments with a front adjustable red marking pointer.

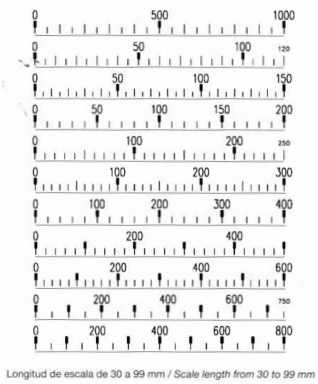
Scales

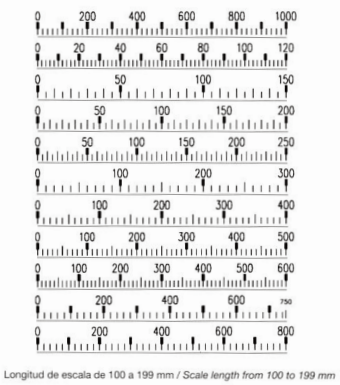
The final scale values are determined according to the following norm line: 1-1,2-1,5-2-2,5-3-4-5-6-7,5-8 and multiples of 10.

In case of instruments for current transformer connection this norm line is additionally supplemented with the standard values 1,25-1,6-1,8 and multiples of 10.

Special adjustment according to norm line in any measuring size, as for example „%“, „m/s“, „Upm“, „bar“ etc.

Special adjustment beyond the norm line, measuring size in any order.


Longitud de escala de 30 a 99 mm / *Scale length from 30 to 99 mm*


Longitud de escala de 100 a 199 mm / *Scale length from 100 to 199 mm*

Interchangeable scales

The product line has interchangeable scales. Such scales allows an easy exchange and fix. If you need to change the dial of the instrument, open the lid and replace the dial the close the lid. This procedure must be carried out with the instrument disconnected.

Instructions

DIN 43700	Instruments for table installation, nominal and cut-out dimensions and sample size
DIN 43701	Electrical control panel measuring instruments
DIN 43718	Front frame and front plates
DIN 43780	Performance specifications for direct acting indicating instruments and their accessories
DIN 43802	Scales and pointers for electrical measuring instruments
DIN 16257	Nominal positons and position signs for measuring instruments
DIN 57410/VDE 0410	Safety requirements for indicating and writing measuring instruments and their accessories
VDE 0411	Protective measures for electronic measuring instruments
VDE 0110	Determinations for the measurements of the air and leakage path of electrical resources
DIN 40050	Degrees of protection; foreign material and waterproofing for electrical resources
VDE/VDI 3540 sheet 2	Reliability of measuring - control- and regulation instruments climatic classes for instruments and accessories).
DIN 43807	Connections and clamps
DIN 46200/46282	Connecting bolts
UL 94 V-0	According to the UL Burning property class
2006/95/EG	Rule of low tension
2004/108/EG	Rule of EMV

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