

Redefine Innovative Metering

BM 48 | 72 | 96 EB 72 | 96

Analogue
Maximum Demand Ammeters
with Bimetallic Movement,
Combined Bimetallic
and Moving - Iron Ammeter



## Analogue Maximum Demand Ammeters With Bimetallic Movement, Combined Bimetallic and Moving - Iron Ammeter

## **Application**

The maximum demand ammeters BM 48 and BM/EB 72/96 housed inmoulded polycarbonate cases, monitor the most economic use of transformer stations & LT distribution feeders by indicating the thermal/time characteristics of the load.

The high torque of the thermal movement drive a red slave pointer linked to the instrument pointer. The slave pointer will remain at the maximum value reached for a subsequent reading until being manually reset by a sealable reset knob to the position of the instrument pointer.

Where the instantaneous and maximum demand currents are required, the EB 72/96 instrument, which combines a thermal bimetallic and a moving - iron movement in the same case mounted diagonally opposite to each other. These instruments are suitable for frequency range of 15-400Hz.

These meters offer several advantages in Switchboard and Generating Set panels. Number of meters can be mounted in aPanel Cut out (Mosaic Mounting). The bezel, glass and dial can be easily replaced.

IS 2419

IS 1248

IS 1248

**DIN 43802** 

DIN 43807

DIN 46282

DIN 40050

**VDE 0110** 

**VDE 0410** 

DIN 43701

IS 1248

IS: 9000

IS 1248

60051

IS 9249

**DIN IEC 61554** 

DIN 46200/46282

IEC 529, IEC 1010

**IEC 51/DINEN** 

#### **Features**

accessories.

- Scale Interchangeability.
- Near linear scale for MI scale in EB.
- User accessable reset Knob.
- Knife edge pointers.
- Easily replaceable glass and bezel.

## **Applicable Standards**

Nominal case and cutout dimensions for indicating measuring instruments. Scale and pointer for electrical measuring instruments. Connections and Terminal markings for panel meters Terminal bolts / leads Clamp straps for connections. Safety requirements for Electrical indicating instruments and their

Performance specifications for direct acting indicating analogue electrical

measuring instruments & their accessories **Environmental conditions** 

Front frames for indicating measuring instruments principle dimensions. UL Combustibility class. Technical conditions of delivery for electrical instruments.

Mechanical strength (Free fall test, vibration test)

VDE / VDI 3540 **DIN 43718** UL 94 V-O DIN 43701 IS 1248, IEC 51, IS 9000 VDE 0411 IFC 61010

Comply with following European directives:

2004 / 108 / EC (EMC directive ), 2006 / 95 /EC (low voltage directive) & amendment 93/68/EEC, For CE Marking.

### Scale and Pointer

Pointer Knife - edge pointer Pointer deflection 0...90°

Over range Bimetallic Moving - iron 1.2 times 2 times

Scale division Coarse - fine Scale length

BM 48 Bimetallic 38 mm EB 72 Bimetallic 63 mm EB 96 Bimetallic 97 mm

BM 72 Bimetallic Moving - iron 61 mm 52 mm EB 96 Bimetallic Moving - iron 71 mm 97 mm

**Mechanical Data** 

Case details Moulded square case suitable for

mounting in Control / Switchgear panels, Machinery consoles.

Case material Polycarbonate,

flame retardant and drip proof

as per UL 94 V-0.

Front facia Glass

BlackPosition of use Vertical Colour of bezel Mounting Clamp. Panel fixing Mounting Stackable in a single cutout

Panel thickness < 25 mm

Terminals Hexagon studs, M4 screws and

wire clamps E3

#### **Electrical Data**

Measuring quantity AC currents Thermal time delay 15 minutes

(blimetalic) (8, 20, 30 min on request)

Response time (moving iron) < 4 sec

Power consumption **BM** < 1.6 VA < 2.5 VA 1 A rated current 5 A rated current < 2.5 VA < 3.4 VA

Overload capacity (acc to IS 1248 / IEC 51)

Continuously 1.2 times rated current

Short duration 10 times for 0.5 sec: 9 overloads 10 times for 5 sec : 1 overload

Enclosure code IP 52 case (IEC 529) IP 00 for terminals without backcover

IP 20 for terminals with backcover Group A according to VDE 0110 Insulation class

Rated insulation voltage 660V Proof voltage testing 3 kV Installation category 300V CAT III

(IEC 1010)

Insulation resistence > 50 Mohm at 500V DC

#### Accuracy at Reference Conditions

Accuracy class acc to IS: 1248/

IEC 51/DIN EN 60051

Reference conditions

23°C +\_2°C Ambient temperature Nominal position + 1° Position of use Rated value of current Input Frequency 45...65 Hz

Other conditions As per IS:1248 (IEC 51/ DIN EN 60051)

Nominal range of use

Ambient temperature 0 ... 50°C Nominal position + 5° Position of use At 0.4 kA/m External magnetic field Frequency 40...65Hz.

## **Standard Measuring Ranges**

Bimetallic Moving - Iron For use on CT ----/ 1 A 1 A 1 A 5 A 5 A ----/ 5 A

3 (bimetallic movement

referred to slave pointer)

1.5 (moving - iron movement)

# BM 48 | 72 | 96 EB 72 | 96

Analogue Maximum Demand Ammeters With Bimetallic Movement, Combined Bimetallic and Moving - Iron Ammeter

#### Over range

Moving Iron 2 times rated current
Bimtal movment 1.2 times rated current
Moving iron & bimetal 1.2 times rated current

Non-Standard ranges available on request.

#### **Environmental Conditions**

Climatic suitability Climatic class 3 according to

VDE/VDI 3540

Operating temperature  $-10 \dots + 55^{\circ}\text{C}$ Storage temperature  $-25 \dots + 65^{\circ}\text{C}$ 

Relative humidity ≤ 75% annual average, non-

condensing

Shock resistance 15g<sub>n</sub> for pulse duration 11 ms Vibration resistance 10-55-10Hz for ampli. 0.15mm

(1.5 g at 50Hz)

Pollution degree

## **Options**

#### Case

Front facia Antiglare glass

Colour of bezel Black

Position of use on request 0°....180°

Dial

Blank dial With initial and end values

marked.

Special markings Numbering /Lettering.
Division dials Basic divisions without

numbering.

Colour markings/bands Red or green.

Other

Calibration For other frequencies 15Hz...400 Hz.

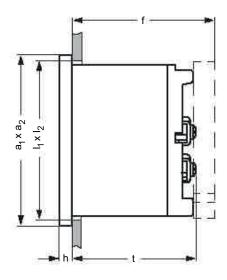
Thermal time delay 8 min / 20 min / 30 min

#### **Accessories**

#### **Safety Terminal Protection**

Full sized polycarbonat back cover, to provide protection against accidental contact (han and fingers )

## **Dimensions**



#### Front in mm Nominal Dimensions, mm Cutout, mm Installation Depth Including Terminal (t), mm Installation Depth Incl. Full back Cover (f), mm $I_1 \times I_2$ $a_1 \times a_2$ h $45^{+0.6}$ x $45^{+0.6}$ 5.5 48 x 48 48 x 48 51 54 $68^{+0.7}$ x $68^{+0.7}$ 62.5 54 5.5 72 x 72 72 x 72 92<sup>+0.8</sup>x 92<sup>+0.8</sup> 96 x 96 96 x 96 5.5 54 62.5

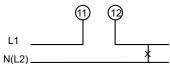
### **Functional Principle**

The thermal bimetallic movement indicates the mean rms value over 15 minutes (optional 8 min, 20 min & 30 min.) and deflects a resettable red slave pointer which shows the maximum value reached.

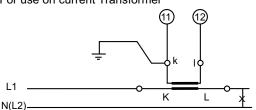
Bimetallic instruments have a specific inertia due to their thermal time lag making these instruments especially suitable to indicate maximum demands or to control long - lasting peak loads. For the measurement of instantaneous rms values, moving - iron movement with pivot suspension, spring loaded shock absorbing jewel bearing and silicon oil damping is incorported. The moving - iron movment has a response time < 4 sec.

## **Connections**

Direct - connected



For use on current Transformer



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## **Safety Precautions**

- 1) Instruments with damaged bezel or glasses must be disconnected from the mains.
- 2) Adequate safety clearance must be maintained to control panel fasteners and to sheet metal housing. If non - insulated connector wires are used.
- 3) The back cover must be snapped into place after connector wires have been clamped for protection against accidental
- 4) Bezel, Scale and Glass may only be replaced under voltage free conditions.
- 5) Instruments to be used in grounded panel.

## **Ordering Information**

Type BM 48 BM 72/96  Front Dimension Front Dimension Front Dimension Front Dimension  Front Dimension  Front Dimension  48mm x 48mm 72mm x 72mm 96mm x 96mm  Measuring Ranges 1 A 5 A /1 A for use on Current transformer — /5A for use on Current transformer  Normal glass <sup>3</sup> Antiglare glass <sup>3</sup> Polycarbonate glass <sup>3</sup> Polycarbonate glass <sup>3</sup> Polycarbonate glass <sup>3</sup> Position of use  Vertical <sup>1</sup> on request 0180 0°3  Additional lettering on request <sup>3</sup> Additional lettering on request <sup>3</sup> Additional numbering on request <sup>3</sup> Additional numbering on request <sup>3</sup> Coloured marking red or green <sup>3</sup> Coloured sector red or green <sup>3</sup> Coloured sector red or green <sup>3</sup> 1.2 times rated current <sup>1</sup> 1.3 times rated current <sup>1</sup> 1.2 times rated current <sup>1</sup> 1.3 times rated current <sup>1</sup> 1.4 times rated current <sup>1</sup> 1.5 times rated current <sup>1</sup> 1.6 times rated current <sup>1</sup> 1.7 times rated current <sup>1</sup> 1.8 times rated current <sup>1</sup> 1.9 times rated current <sup>1</sup> 1.10 times rated current <sup>1</sup> 1.10 times rated current <sup>1</sup> 1.10 times rated cur		
BM 72/96 BM 72/96 BB 72/96 BB 72/96 BB 72/96 BB 72/96 BB 72/96 BB 72/96  Front Dimension  Front Dimension  Front Dimension  A8mm x 48mm 72mm x 72mm 96mm x 96mm  Measuring Ranges  I A 5 A /1 A for use on Current transformer — /5A for use on Current transformer  Normal glass antiglare glass Polycarbonate glass Polycarbonate glass Polycarbonate glass Antiglare glass Additional glass Additional lettering on request Additional lettering on request Additional lettering on request Additional lettering on request Additional numbering on request Coloured marking red or green Coloured sector red or green Coloured sector red or green L2 times rated current L2 times rated current Adving iron Bimtal movment Moving iron Bimtal movent L2 times rated current Antiglare glass Additional for frequency 15 - 400 Hz Antiglare glass Antiglare glass Antiglare glass Antiglare glass Additional	Type BM 48	Maximum demand indicator with
bimetallic movement Maximum demand indicator with bimetallic movement and moving iron  Front Dimension  Front Dimension  48mm x 48mm 72mm x 72mm 96mm x 96mm  Measuring Ranges  1 A 5 A /1 A for use on Current transformer /5A for use on Current transformer Normal glass <sup>-1</sup> Antiglare glass <sup>-3</sup> Polycarbonate glass <sup>-3</sup> Polycarbonate glass <sup>-3</sup> Colour of Bezel  Black <sup>-1</sup> Red, Blue, Yellow, White <sup>-3</sup> Position of use  Vertical <sup>-1</sup> on request 0180 003  Standard scale same as measuring range Blank dial with division <sup>-3</sup> Additional lettering on request <sup>-3</sup> Additional numbering on request <sup>-3</sup> Coloured marking red or green <sup>-3</sup> Coloured marking red or green <sup>-3</sup> Coloured sector red or green <sup>-3</sup> Coloured sector red or green <sup>-3</sup> 1.2 times rated current <sup>-1</sup> 1.5 min <sup>-1</sup> So Hz <sup>-1</sup> For frequency 15 - 400 Hz <sup>-3</sup> Calibration  50 Hz <sup>-1</sup> For frequency 15 - 400 Hz <sup>-3</sup> Calibration  15 min <sup>-1</sup> 8 min <sup>-3</sup> 20 min <sup>-3</sup> 30 min <sup>-3</sup> 21 EGLER <sup>-7</sup>		
EB 72/96 Maximum demand indicator with bimetallic movement and moving iron  Front Dimension 48mm x 48mm 72mm x 72mm 96mm x 96mm x 96mm  Measuring Ranges 1 A 5 A /1 A for use on Current transformer — /5A for use on Current transformer  Front facia Normal glass 1 Antiglare glass 3 Polycarbonate glass 3 Po	BM 72	
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30 min.*3 Logo ZIEGLER *1		
Logo ZIEGLER <sup>™</sup>		
<u> </u>	Logo	
Ierminal Protection   Full sized polycarbonate back cover	-	
	Terminal Prote	tion   Full sized polycarbonate back cover

<sup>\*1</sup>Standard

#### Ordering example

EB 96 for use on current transformer 300/5A thermal time delay 15

Specifications are subject to change without notice (04/10)

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<sup>&</sup>lt;sup>33</sup>Please clearly add the desired specifications while ordering