Analog Meter

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

Data Sheet

Application

The maximum demand ammeters MB 48 and MB/BE 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 BE 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.

Features

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

Applicable Standards

Nominal case and cutout dimensions for indicating measuring instruments.	IS 2419 DIN IEC 61554
Scale and pointer for electrical measuring instruments.	IS 1248 DIN 43802
Connections and Terminal markings for panel meters	IS 1248 DIN 43807
Terminal bolts / leads	DIN 46200/46282
Clamp straps for connections.	DIN 46282
Safety requirements for Electrical indicating instruments and their accessories.	IS 9249 DIN 40050 VDE 0110 VDE 0410 IEC 529, IEC 1010
Performance specifications for direct acting indicating analogue electrical	IS 1248 IEC 51/DINEN 60051
measuring instruments & their accessories	DIN 43701
Environmental conditions	IS 1248 IS: 9000 VDE / VDI 3540
Front frames for indicating measuring instruments principle dimensions.	DIN 43718
UL Combustibility class.	UL 94 V-O
Technical conditions of delivery for electrical instruments.	DIN 43701
Mechanical strength (Free fall test, vibration test)	IS 1248, IEC 51, IS 9000 VDE 0411 IEC 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...90^0	
Over range	Bimetallic	Moving - iron
	1.2 times	2 times
Scale division	Coarse - fine	
Scale length	MB 48 Bimetallic — 38 mm BE 72 Bimetallic — 63 mm BE 96 Bimetallic — 97 mm MB 72 Bimetallic Moving - iron 52 mm 61 mm BE 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
Colour of bezel	BlackPosition of use Vertical
Panel fixing	Mounting Clamp.
Mounting	Stackable in a single cutout
Panel thickness	$\leq$ 25 mm
Terminals	Hexagon studs, M4 screws and wire clamps E3

Electrical Data

Measuring quantity	AC currents
Thermal time delay (blimetalic)	15 minutes (8, 20, 30 min on request)

Response time (moving iron) < 4 sec

Power consumption	MB	BE
1 A rated current	< 1.6 VA	< 2.5 VA
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 (IEC 529)	IP 52 case IP 00 for terminals without backcover IP 20 for terminals with backcover
Insulation class	Group A according to VDE 0110
Rated insulation voltage	660V
Proof voltage testing	3 kV
Installation category (IEC 1010)	300V CAT III
Insulation resistence	> 50 Mohm at 500V DC

Accuracy at Reference Conditions

Accuracy class acc to IS : 1248/ IEC 51/DIN EN 60051	3 (bimetallic movement referred to slave pointer) 1.5 (moving - iron movement)

Reference conditions

Ambient temperature	23 ℃ $\pm$ 2 ℃
Position of use	Nominal position $\pm$ 1^0
Input	Rated value of current
Frequency	45...65 Hz
Other conditions	As per IS:1248 (IEC 51/ DIN EN 60051)

Nominal range of use

Ambient temperature	0 ... 50 ℃
Position of use	Nominal position $\pm$ 5^0
External magnetic field	At 0.4 kA/m
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

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 ... + 55 ℃
Storage temperature	-25 .... + 65 ℃
Relative humidity	≤ 75% annual average, non-condensing
Shock resistance	15$g_n$for pulse duration 11 ms
Vibration resistance	10-55-10Hz for ampli. 0.15mm (1.5 g at 50Hz)
Pollution degree	2

Options

Case

Front facia	Antiglare glass
Colour of bezel	Black
Position of use	on request 0^0....180 ^{0}

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

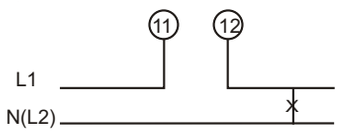
Full sized polycarbonat back cover, to provide protection against accidental contact (han and fingers)

Functional Principle

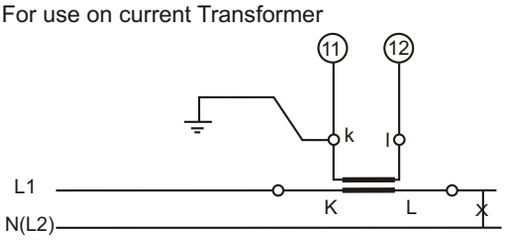
The thermal bimetallic movement indicates the mean rms value over 15 minutes (optional 8 min, 20 min & 30 min.) and deflects a resettable red slave pointer which shows the maximum value reached.
Bimetallic instruments have a specific inertia due to their thermal time lag making these instruments especially 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

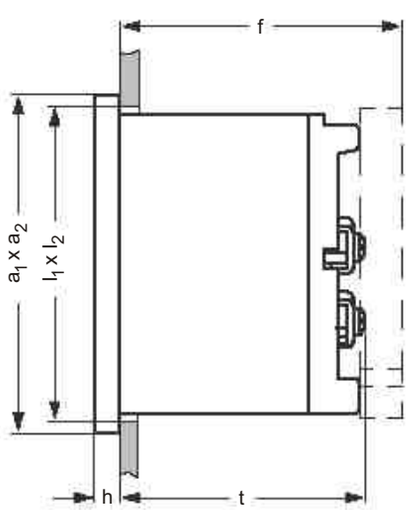
Direct - connected



For use on current Transformer



Dimensions



Front in mm	Nominal Dimensions, mm		Cutout, mm	Installation Depth Including Terminal (t), mm	Installation Depth Incl. Full back Cover (f), mm
	a_1 x a_2	h	l_1 x l_2		
48 x 48	48 x 48	5.5	$45^{+0.6}$ x $45^{+0.6}$	51	54
72 x 72	72 x 72	5.5	$68^{+0.7}$ x $68^{+0.7}$	54	62.5
96 x 96	96 x 96	5.5	$92^{+0.8}$ x $92^{+0.8}$	54	62.5

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 contact.
4) Bezel, Scale and Glass may only be replaced under voltage free conditions.
5) Instruments to be used in grounded panel.

Ordering Information

Type	MB 48	Maximum demand indicator with bimetallic movement
	MB 72/96	Maximum demand indicator with bimetallic movement
	BE 72/96	Maximum demand indicator with bimetallic movement and moving iron
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
Front facia		Normal glass*1 Antiglare glass*3 Polycarbonate glass*3
Colour of Bezel		Black*1 Red, Blue, Yellow, White*3
Position of use		Vertical*1 on request 0....180°*3
Dial		Standard scale same as measuring range*1 Blank dial with division*3 Additional lettering on request*3 Additional numbering on request*3 Coloured marking red or green*3 Coloured sector red or green*3
Over range Moving Iron Bimtal movment Moving iron & bimetal		 2 times rated current*1 1.2 times rated current*1 1.2 times rated current *3
Calibration		50 Hz*1 For frequency 15 - 400 Hz*3
Calibration		15 min*1 . 8 min.*3 20 min.*3 30 min.*3
Logo		Shanti *1
Terminal Protection		Full sized polycarbonate back cover

*1 Standard
*3 Please clearly add the desired specifications while ordering

Ordering example

BE 96 for use on current transformer 300/5A thermal time delay 15 min.

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

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