

# Bimetal Indicators



**Measurement of the average effective value through bimetal mechanism (with non-return pointer)**

**Indication of currently measured value through moving iron mechanism**

— With same or opposing rotation axis

**Inputs**

— 1 A or 5 A

**Response times**

— 8 or 15 minutes

**Formats**

- 72 mm x 72 mm
- 96 mm x 96 mm
- 144 mm x 144 mm

**General data**

**Standards**

The indicators comply with DIN EN 60051 and with the safety regulations according to DIN EN 61010-1.

In the sections below you can find a short description of the most important parts of these regulations regarding the construction and the characteristics of electrical measuring instruments.

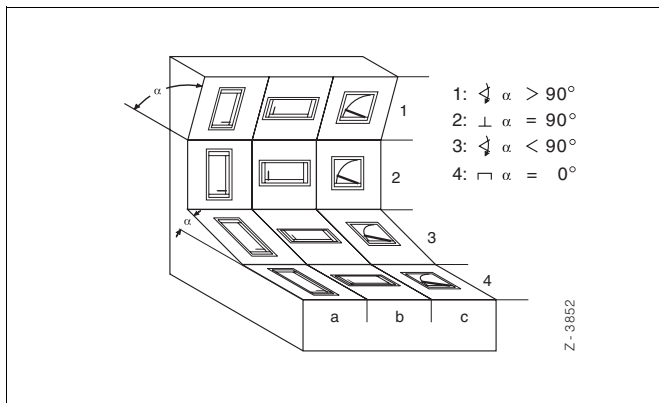
**Measured error**

The measured error of an indicator or its accessories is given by the limits through basic errors and effects.

Bimetal indicators comply with Class 3, the moving iron mechanism with Class 1.5.

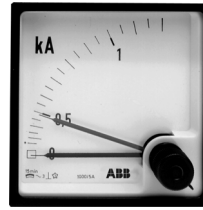
**Mounting orientation**

Generally, the nominal position is indicated by a position symbol. For indicators without such a position identification, the reference range is any vertical or horizontal position. The nominal mounting orientation is 5° in every direction of the reference position. Note that the effect (in addition to the indicated error) must not be greater than 50 % of the respective classified error.

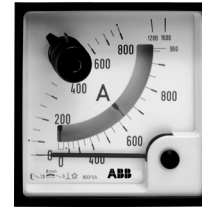


**Temperature effect**

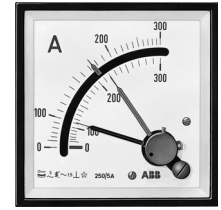
If not otherwise stated, the reference temperature is 23 °C ± 2 K for indicators of Class 0.5 to 5. The additional error for a nominal range of ±10 K within this temperature range must not exceed the classified error.



Non-return pointer



Moving iron mechanism with opposing rotation axis



Moving iron mechanism with same rotation axis

**General technical specifications**

**Scale and pointer design**

The scales and pointers for square, circular, vertical or horizontal scales comply with DIN 43802, Parts 2 and 4.

**Environmental conditions to DIN EN 60721-2-1, 2, 5**

Conditions	Permissible variables	
	Normal measuring instruments → H, Y, G	Relatively tropicalized instruments → H, V, F
Operating temperature	-25...+40 °C	-25...+55 °C
Relative humidity	max. 85 %, but not more than 60 days per year, otherwise 75 %, annual average 65 % (max. temperature +27 °C)	max. 95 %, but not more than 30 days per year, otherwise 85 %, annual average 75 % (max. temperature +25 °C)
Condensation	none	none

**Mechanical category to DIN EN 60068**

**Vibration = Part 2-6**

Normal version	
Frequency range	5...55 Hz
Acceleration	max. 2.5 g
No. of cycles	5
Runtime	1 octave per minute

**Shock = Part 2-27**

Normal version	
Acceleration	max. 15 g
Time of action	11 ms

**Type of protection**

If not otherwise specified, the indicators comply with DIN EN 60529

- IP 52 for case<sup>1)</sup>
- IP 00 for terminals

<sup>1)</sup> Exception: FBia = IP 40 (see device specifications)

**With bimetal mechanism**  
**With moving iron/bimetal mechanism**

**Application**

Bimetal ammeters are thermally inert and indicate the average effective value. Intermittent current peaks have no influence on the measuring results, but continuous interferences are indicated. Due to the big torque of the measuring mechanism, the pointer can move a non-return pointer.

As a result, a reached maximum value remains constantly readable until a manual reset takes place.

**Technical data**

**Normal version**

black, RAL 9005, matt

**Frequency range**

50...100 Hz

**Mounting orientation**

vertical, if not otherwise specified;  
 2c in the illustration on page 2

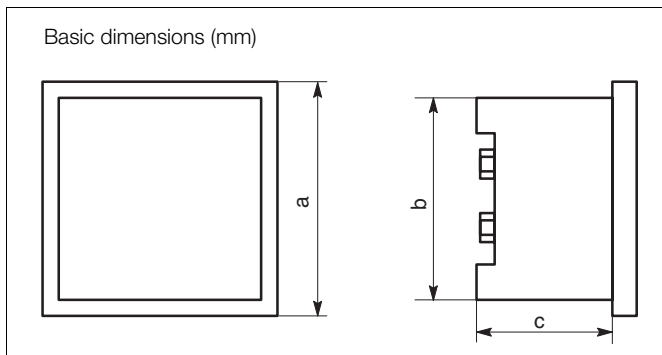
**Thermal delay of bimetal mechanism**

15 min.; optionally 8 min.

**Mechanical construction**

	Front dimensions (mm)		Rated dimensions		Cutout dimensions		Mounting depth	Connections
			a	h	b		c	e
Bimetal with non-return pointer	72 x 72	72 x 72	5	5	68 <sup>+0,7</sup> x 68 <sup>+0,7</sup>	53	M4	
	96 x 96	96 x 96	5		92 <sup>+0,8</sup> x 92 <sup>+0,8</sup>	60	M4	
Bimetal with moving iron	72 x 72	72 x 72	5	5	68 <sup>+0,7</sup> x 68 <sup>+0,7</sup>	53	M4	
	96 x 96	96 x 96	5		92 <sup>+0,8</sup> x 92 <sup>+0,8</sup>	60	M4	
	144 x 144	144 x 144	8		138 <sup>+1</sup> x 138 <sup>+1</sup>	98	M5	

**Dimensional drawings**



**Device specifications**

Model	Bimetal mechanism		Bimetal with opposing scale		Bimetal with same rotation axis	
	B72-NW	B96-NW	FB72-NW	FB96-NW	FBIA96-W	FBIA144-W
Type	B72-NW	B96-NW	FB72-NW	FB96-NW	FBIA96-W	FBIA144-W
Front dim. (mm)	72 x 72	96 x 96	72 x 72	96 x 96	96 x 96	144x144
<b>Scale length(mm)</b>						
Bimetal	62	98	44	71	66	104
Moving iron			62	98	80	128
<b>Indic. error (%)</b>						
Bimetal (+/-)	3	3	3	3	3	3
Moving iron			1.5	1.5	1.5	1.5
<b>Own consumption (VA)</b>						
Transf. sec. 1 A	< 1.6	< 1.6	< 1	< 2.5	< 2	< 5.8
sec. 5 A	< 2.5	< 2.5	< 2.7	< 3.4	< 4.2	< 4.2
Weight (kg)	0.2	0.26	0.2	0.3	0.5	0.9
Front panel protection	IP 52	IP 52	IP 52	IP 52	IP 40	IP 40
Mounting	Screwed spindle		Screwed spindle		Screwed bracket	
Housing material	Polycarbonate				Sheet steel	
Protection class	I	I	I	I	I	I
Measuring voltage category	CAT III	CAT III	CAT III	CAT III	CAT III	CAT III
Degree of pollution	2	2	2	2	2	2
Operating voltage	according to DIN 61010					

**Ordering information**

<b>Bimetal Indicator</b> Bimetal mechanism <b>B72-NW</b> 72 x 72 mm <b>B96-NW</b> 96 x 96 mm	Variant digit No.	1-8	9	10	11	Code			
	Catalog No.	<b>V31077A-</b>							
<b>Response Time</b> 8 min. 15 min.			1 2						
<b>Measuring Range</b> 0...5 A direct x/5 A to transformer 0...1 A direct x/1 A to transformer				1 2 3 4					
<b>Scale</b> 0...6 A direct 0...1.2 A x primary current 0...1.2 A direct					1 2 3				
<b>Transformer Primary Current</b> Please indicate code number (see table)						8_ _			
<b>Bimetal Indicator</b> Bimetal moving iron mechanism with opposite rotation axis <b>FB72-NW</b> 72 x 72 mm <b>FB96-NW</b> 96 x 96 mm	Variant digit No.	1-8	9	10	11	Code			
	Catalog No.	<b>V31071A-</b>							
<b>Response Time</b> 8 min. 15 min.			1 2						
<b>Measuring Range</b> 0...5 A direct x/5 A to transformer 0...1 A direct x/1 A to transformer				1 2 3 4					
<b>Scale</b> B: 0...1.2 A                      F: 0...1 / 2 A B: 0...6 A                         F: 0...5 / 10 A B: 0...1.2 x primary current    F: 0...1.2 x primary current B: 0...1.2 x primary current    F: 0...1 / 2 x primary current					4 8 6 7				
<b>Transformer Primary Current</b> Please indicate code number (see table)						8_ _			
<b>Bimetal Indicator</b> Bimetal moving iron mechanism with same rotation axis <b>FBIA96-W</b> 72 x 72 mm <b>FBIA144-W</b> 144 x 144 mm	Variant digit No.	1-8	9	10	11	Code			
	Catalog No.	<b>V31080A-</b>							
<b>Response Time</b> 8 min. 15 min.			1 2						
<b>Measuring Range</b> 0...5 A direct x/5 A to transformer 0...1 A direct x/1 A to transformer				1 2 3 4					
<b>Scale</b> B: 0...1.2 A                      F: 0...1 / 2 A B: 0...6 A                         F: 0...5 / 10 A B: 0...1.5 x primary current    F: 0...1 / 1.5 x primary current B: 0...1.2 x primary current    F: 0...1.2 x primary current B: 0...1.2 x primary current    F: 0...1 / 2 x primary current					4 8 5 6 7				
<b>Transformer Primary Current</b> Please indicate code number (see table)						8_ _			

**Transformer - Primary current**

Range	Code	Range	Code
0...10 A	<b>814</b>	0...150 A	<b>825</b>
0...15 A	<b>824</b>	0...200 A	<b>835</b>
0...20 A	<b>834</b>	0...250 A	<b>845</b>
0...25 A	<b>844</b>	0...300 A	<b>855</b>
0...30 A	<b>854</b>	0...400 A	<b>865</b>
0...40 A	<b>864</b>	0...500 A	<b>875</b>
0...50 A	<b>874</b>	0...600 A	<b>885</b>
0...60 A	<b>884</b>	0...700 A	<b>828</b>
0...70 A	<b>818</b>	0...750 A	<b>868</b>
0...75 A	<b>858</b>	0...800 A	<b>895</b>
0...80 A	<b>894</b>	0...1 kA	<b>816</b>
0...100 A	<b>815</b>	0...1,5 kA	<b>826</b>

<b>Additional ordering information</b>			
		Code	
Scale sector (color)	(clear text)	ZPF	
Red mark at:	(clear text)	ZPR	
Additional numbers	(clear text)	ZZB	
Additional text	(clear text)	ZZA	
Front panel RAL 7032 (pebble gray)		ZGH	
Front panel RAL 7037 (dusty gray)		ZGG	
Mounting orientation	(clear text)	ZGE	
Low-reflection pane		ZGB	
Terminal cover IP 20		ZOK	
Case identification	(clear text)	ZGJ	
Constant pane 1...10		362	
Category 2/3 (vibration-proof)		ZAA	





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