

JIS

JAPANESE INDUSTRIAL STANDARD

Electrical Comparators

JIS B 7536 — 1982

Translated and Published

by

Japanese Standards Association

Printed in Japan

Translation without guarantee
In the event of any doubt arising, the original
standard in Japanese is to be evidence

JAPANESE INDUSTRIAL STANDARD

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Electrical Comparators

B 7536-1982

1. Scope

This Japanese Industrial Standard specifies the electrical comparators of 0.1, 0.2, 0.5, 1, 2, 5, 10 and 20 μm in scale interval or those of 0.1 and 1 μm in minimum indication amount among electrical comparators.

Remark: The units and numerical values given in { } in this standard are in accordance with the Granimetric System of Units and are appended for reference.

2. Definitions

The definitions of main terms used in this standard shall be in accordance with JIS Z 8103 and JIS C 1002, and other definitions shall be as follows:

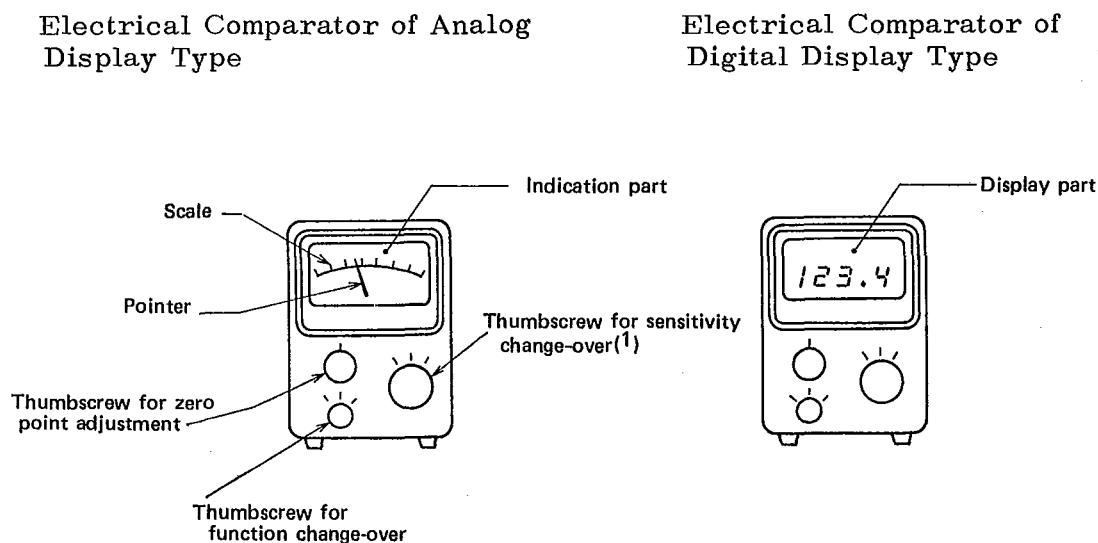
- (1) electrical comparator The electrical comparator means the comparator with which minute displacement amount is converted to electric amount by the use of the detector having contact measuring device and is indicated by electrical amplification.
- (2) electrical comparators of analog display type The electrical comparators of analog display type mean the electrical comparators representating displacement amount by the use of electrical indicating instrument specified in JIS C 1102.
- (3) electrical comparators of digital display type The electrical comparators of digital display type mean the electrical comparators indicating displacement amount in digital display by the use of AD converter.
- (4) detector The detector means the converter converting displacement or dimension change to electrical amount.
- (5) indication range The indication range means the range capable of being indicated on indicating instrument within the measuring range.
- (6) effective indication range The effective indication range means the range limited by the linearity of detector within the indication range.
- (7) minimum indicating amount The minimum indicating amount means the minimum amount of variable one (equivalent to scale interval) in digital display. It is represented by unit digit.
- (8) output signal The output signal means the output of electric amount having the correlation to indicating value.
- (9) operation error The operation error means the difference between the value indicating not less than 2 measuring values with electric operation and the value obtained with calculation.

- (10) instrumental error The instrumental error means the difference between the indicating value with the block gauge corresponding to an optional indicating value after correctly adjusting the sensitivity and zero point of electrical comparators and the true value to be indicated.

3. Names

The names of the main parts of the indicator and detector of electrical comparator shall be in accordance with Fig. 1 and Fig. 2.

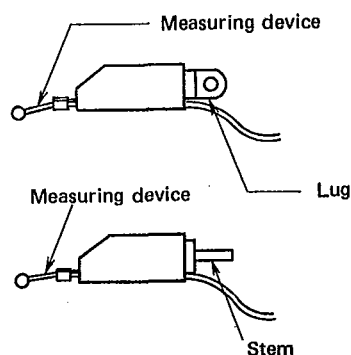
Fig. 1. Indicator



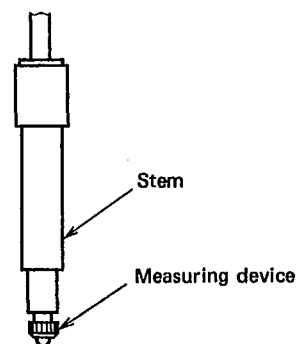
Note ⁽¹⁾ For naming this thumbscrew, thumbscrew for range change-over or that for multiplying factor change-over may apply, too.

Fig. 2. Detector

Detector of Lever Type



Detector of Plunger Type



Remark: Those Figures are only used for giving names and not for giving the standard of shape and construction.

4. Classification

The electrical comparators shall be classified into the following 2 classes:

- (1) Electrical comparator of analog display type
- (2) Electrical comparator of digital display type

5. Performance

The performance of electrical comparator shall be tested according to the test method specified in 9., and shall be in accordance with Table 1 and Table 2.

Table 1. Performance 1

No.	Item	Electrical comparator of analog display type		Electrical comparator of digital display type	
		Applied scale interval μm	Tolerance scale division	Applied minimum indicating amount μm	Tolerance digit
1	Instrumental error	0.1, 0.2	± 1	0.1, 1	$\pm (1\% \text{ of effective indication range} + 1)$
		0.5 min.	± 0.5		
2	Repeatability	All scale intervals	0.5	0.1	0.2 % of effective indication range + 2
3	Stability of indication	All scale intervals	1	1	1
4	Operation error	0.1, 0.2	± 1.5	0.1, 1	$\pm (2\% \text{ of operation range} + 1)$
		0.5 min.	± 0.8		
5	Variation characteristics of indication due to the variation of alternating power source voltage	All scale intervals	± 0.3	0.1, 1	$\pm (2\% \text{ of effective indication range} + 1)$
6	Deviation of zero point	All scale intervals of those capable of changing-over sensitivity	1	0.1 and 1 of that capable of changing-over sensitivity	1

Remark: The numerical values given in this Table mean those at the temperature of 20 °C.