

JIS

JAPANESE INDUSTRIAL STANDARD

Non-dispersive Infrared
Gas Analyzer

JIS K 0151 —1983

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Non-dispersive Infrared Gas Analyzer

K 0151-1983

1. Scope

This Japanese Industrial Standard specifies the non-dispersive and positive-filter-type infrared gas analyzer, hereinafter referred to as the "analyzer", which detects the concentration by deflection method.

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

2. Definitions

For the purpose of this standard, the following definitions apply. Other definitions are given in JIS K 0211 and JIS K 0212.

- (1) non-dispersive The fact that beam of light is not to be dispersed by the dispersion elements such as a prism or a diffraction grating.
- (2) positive-filter-type The method by which the infrared rays being absorbed by measuring component are measured at the wavelength absorbed.
- (3) repeatability The coinciding degree of the values that are measured repeatedly under the same situation such as using the same analyzer, measuring the same object, applying the same method and under the same condition, and within comparatively short period.
- (4) reference gas The gas which does not absorb the infrared rays and becomes reference when measuring the absorption of infrared rays by applying sample cells.
- (5) reference cell The cell in which reference gas is enclosed.
- (6) reference beam The beam which transmits through a reference cell.
- (7) span-adjusting gas The gas used instead of span-calibrating gas at the tests excepting the scale determination and scale calibration of an analyzer.
- (8) zero-adjusting gas The gas used instead of zero-calibrating gas at the tests excepting the scale determination and scale calibration of an analyzer.

3. Classification

The classification of analyzers shall be as follows:

- (1) Stationary type analyzer (hereinafter referred to as the "stationary type")
- (2) Movable type analyzer (hereinafter referred to as the "movable type")

Applicable Standards: see page 9.

4. Rated Voltage and Rated Frequency

The rated voltage of the analyzer shall be single phase a.c. 100 V, and the rated frequency shall be 50 Hz for exclusive use, 60 Hz for exclusive use, or 50 Hz and 60 Hz for common use.

5. Performance

The analyzer shall comply with the following performances.

- (1) Repeatability The difference of values, when tests are carried out in accordance with the testing method of 8.(2), shall be within $\pm 2\%$ of the maximum scale value at each of measuring steps (hereinafter referred to as the "range").
- (2) Zero Drift The zero drift, when tests are carried out in accordance with the testing method of 8.(3), shall be within $\pm 2\%$ of the maximum scale value at each range.
- (3) Span Drift The span drift, when tests are carried out in accordance with the testing method of 8.(4), shall be within $\pm 2\%$ of the maximum scale value at each range.
- (4) Indication Error The indication error, when tests are carried out in accordance with the testing method of 8.(5), shall be within $\pm 5\%$ of the maximum scale value at each range.
- (5) Response Time The response time, when tests are carried out in accordance with the testing method of 8.(6), shall be 40 sec. or less.
- (6) Stability to Change of Flow Rate of Sample Gas The indication change of flow rate, when tests are carried out in accordance with the testing method of 8.(7), shall be within $\pm 2\%$ of the maximum scale value.
- (7) Stability to Voltage Fluctuation The indication change to voltage fluctuation, when tests are carried out in accordance with the testing method of 8.(8), shall be within $\pm 1\%$ of the maximum scale value.
- (8) Withstand Voltage There shall be no abnormality when tests are carried out in accordance with the testing method of 8.(9).
- (9) Insulation Resistance The insulation resistance, when tests are carried out in accordance with the testing method of 8.(10), shall be 2 M Ω or more.

6. Construction

6.1 General Construction The construction of the analyzer shall conform to each of following items.

- (1) The shape shall be correct, and the assembly and the finish of each part shall be satisfactory and rigid.
- (2) There shall be no danger at ordinary running condition and it shall safely and smoothly operate.