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**Performance Requirements for Instruments
Used to Detect Oxygen-Deficient/
Oxygen-Enriched Atmospheres**

Approved 19 November 2007

ANSI/ISA-92.04.01, Part I-2007, Performance Requirements for Instruments Used To Detect Oxygen-Deficient/Oxygen-Enriched Atmospheres

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Contents

1 Scope	9
2 Purpose.....	10
3 Definitions and terminology	10
4 General requirements.....	12
5 Construction.....	12
5.1 General.....	12
5.2 Meters, indicators, and outputs	13
5.3 Alarm/output function(s) (where provided).....	13
5.4 Trouble signals	14
5.5 Controls and adjustments	14
5.6 Consumables.....	14
6 Instrument markings and instruction manuals.....	15
6.1 Markings on instrument	15
6.2 Instruction manual	16
7 Performance tests.....	17
7.1 General.....	17
7.2 Sequence of tests	18
7.3 Preparation of the instrument	18
7.4 Conditions for test and test area.....	18
7.5 Non-powered transportation	19
7.6 Drop test	19
7.7 Vibration	20
7.8 Initial calibration and set-up	20
7.9 Accuracy	20
7.10 Repeatability	21
7.11 Step-change response and recovery.....	22
7.12 Supply voltage variation	22
7.13 Temperature variation	24
7.14 Humidity variation	25
7.15 Position sensitivity test	26
7.16 Air velocity variation.....	26
7.17 Radio frequency interference (RFI)	26
7.18 Long-term stability	27
7.19 Battery and low-battery voltage alarm tests.....	28
7.20 Exposure to high level of oxygen.....	28
Annex A — References	31

This is a preview of "ANSI/ISA 92.04.01 Pa...". [Click here to purchase the full version from the ANSI store.](#)

1 Scope

1.1 This Standard addresses the details of construction, performance, and testing of portable, mobile, and stationary electrical instruments used to provide a warning of the presence of oxygen-deficient or oxygen-enriched atmospheres.

NOTE — Human physiology responds to oxygen pressure, not oxygen concentration; however, they are physiologically equivalent at one normal atmosphere. (See Clause 3, Normal atmosphere.) The normal atmosphere is composed approximately of 20.9 percent oxygen (21.2 kPa)(3.07 psia), 78.1 percent nitrogen (79.1 kPa)(11.5 psia), and 1 percent argon (1.01 kPa)(.146 psia) by volume with small amounts of other gases. Reference: National Institute for Occupational Safety and Health, (NIOSH), Pub. No. 80-106.

1.2 This Standard applies to mains-connected instruments rated at 250 V nominal or less, and to portable, mobile, and stationary battery-powered instruments.

1.3 This Standard applies to instruments suitable for use in an ambient temperature range of at least -10°C to 50°C (+14°F to +122°F).

1.4 This Standard applies to instruments providing at least one range that includes 15 to 20.9 (15.2 to 21.2 kPa)(2.20 to 3.07 psia) or 20.9 to 25.0 (21.2 to 25.3 kPa)(3.07 to 3.63 psia) volume percent oxygen at one normal atmosphere. Hereafter, the volume percentage of oxygen at one normal atmosphere will be expressed as "percent oxygen."

1.5 This Standard applies to instruments that provide at least one oxygen-deficient alarm that cannot be adjusted below 18 percent (18.2 kPa)(2.64 psia) oxygen or at least one oxygen-enrichment alarm that cannot be adjusted above 25 percent (25.3 kPa)(3.67 psia) oxygen.

1.6 For instruments with multiple ranges, this Standard does not apply to any range that does not include normal atmospheric oxygen pressure (20.9 percent oxygen or 21.2 kPa[3.07 psia] at one normal atmosphere).

1.7 This Standard does not apply to oxygen-monitoring instruments of the laboratory or scientific type, which are used for analysis or measurement in process control and process-monitoring applications or instruments with full-scale oxygen concentrations less than 15 percent (15.2 kPa)(2.20 psia) or greater than 30 percent (30.4 kPa)(4.41 psia) oxygen.

NOTE — The user should specify instrumentation that will provide a higher level of accuracy than the minimum tolerances of this Standard if required by the application risk.

1.8 The user should be aware of the effects of altitude and barometric pressure on both the instrument and the user. The effects are not intended to be evaluated by this performance Standard.