



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS Z 8103 : 2000

(JSA)

Glossary of terms used in measurement

ICS 01.040.17; 17.020

Descriptors : vocabulary, measurement

Reference number : JIS Z 8103 : 2000 (E)

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of International Trade and Industry through deliberations at the Japanese Industrial Standards Committee, as the result of proposal for revision of Japanese Industrial Standard submitted by the Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law. Consequently **JIS Z 8103 : 1990** is replaced with this Standard.

Date of Establishment: 1959-10-01

Date of Revision: 2000-07-20

Date of Public Notice in Official Gazette: 2000-07-21

Investigated by: Japanese Industrial Standards Committee
Divisional Council on Basic Items

JIS Z 8103 : 2000, First English edition published in 2002-04

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

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Printed in Japan

Glossary of terms used in measurement

1 Scope This Japanese Industrial Standard defines the main terms concerning the measurement in mining and manufacturing industries.

2 Classification The terms shall be classified as follows:

- a) **General**
- b) **Measurements**
 - 1) **Fundamentals of measurement**
 - 2) **Objects of measurement**
 - 3) **Conditions of measurement**
 - 4) **Types of measurement**
 - 5) **Constitution of measuring system**
 - 6) **Errors and accuracies**
- c) **Signal processing**
 - 1) **Functions and instruments**
 - 2) **Signals and noises**
- d) **Instruments**
 - 1) **Types**
 - 2) **Elements**
 - 3) **Performances and characteristics**
- e) **Data processing**
 - 1) **Measured values**
 - 2) **Statistical processing**

3 Definitions The terms and definitions specified in this Standard shall be as given in the following:

English equivalents are given for information.

- Remarks
- 1 In the case where two or more terms are given together in one column, these should be employed with priority according to the order as stated.
 - 2 In the case where a term is appended with parentheses “()”, there are two ways of expression as one which is a term including characters given in () and another excluding characters given in ().
 - 3 The English equivalents inscribed in bold face type indicate the terms which are contained in International vocabulary of basic and general terms in metrology (VIM) : 1993 or Guide to the expression of uncertainty in measurement (GUM) : 1993.
 - 4 The systematic diagram of glossary of terms used in measurement is as shown in Annex (informative).

a) General

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
1001	計測	KEISOKU	For a specific purpose, a procedure for achieving the desired object by investigating the methods and means in order to grasp matters quantitatively, bringing in operation and using the results thereof.	measurement , instrumentation (British)
1002	計量	KEIRYÔ	Measurement based on a measurement standard adopted by convention.	metrology
1003	工業計測	KÔGYÔ-KEISOKU	An instrumentation conducted in the process of production or in relation to the production in industry.	industrial instrumentation (British)
1004	計測化	KEISOKU-KA	Measures taken with which an object to be investigated or controlled is analyzed to achieve instrumentation.	instrumentation
1005	計測管理	KEISOKU-KANRI	Measures taken for controlling the system of instrumentation actions.	—
1006	計装	KEISÔ	Measures taken for equipping measuring apparatus, control apparatus, etc.	instrumentation
1007	観測	KANSOKU	For the purpose of investigating a certain matter, an action to observe and recognize facts. Remarks : Concerning the natural phenomena, sometimes this means a measurement.	observation
1008	同定	DÔTEI	A recognition to ascertain that matters A and B are identical.	identification

b) Measurements

1) Fundamentals of measurement

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2101	測定	SOKUTEI	A means for expressing a certain quantity by using a numerical value or sign, comparing with the quantity to be used as reference.	measurement
2102	測定学	SOKUTEI-GAKU	A science which deals with the fundamental methods and means for measurements.	metrology , measurement science
2103	測定系	SOKUTEI-KEI	Complete set of measuring instruments and other equipment assembled to carry out specific measurements.	measuring system
2104	測定の尺度	SOKUTEI NO SYAKUDO	The rule of correspondence of unit to unit between the quantity and the numerical value, determined for the purpose of expressing a quantity by a numerical value.	scale of measurement
2105	量	RYÔ	A quantity which is capable of being discriminated qualitatively and determined quantitatively by the attribute of a phenomenon, substance or material.	quantity
2106	量体系	RYÔ-TAIKEI	Set of quantities, in the general sense, among which defined relationships exist.	system of quantities
2107	物理量	BUTURI-RYÔ	A quantity of which dimension is established under a definite theoretical system in physics, and which is capable of being expressed as the multiple of a definite unit.	physical quantity
2108	基本量	KIHON-RYÔ	One of the quantities that, in a system of quantities, is conventionally accepted as functionally independent of one another.	base quantity
2109	組立量	KUMITATE-RYÔ	Quantity defined, in a system of quantities, as a function of base quantities of that system.	derived quantity
2110	工業量	KÔGYÔ-RYÔ	That quantity, concerning plural number of physical qualities, which is effective in industry being defined by a measuring method. For example, hardness, surface roughness, or the like.	industrial quantity

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2111	心理物理量	SINRI-BUTURI-RYÔ	Under specific conditions, a quantity which is significant psychophysically corresponding unit to unit with sense, as well as is capable of being defined and measured. For example, tristimulus values of colours, magnitude of sound, or the like.	psychophysical quantity
2112	量の次元	RYÔ NO ZIGEN	Expression that represents a quantity of a system of quantities as the product of powers of factors that represent the base quantities of the system.	dimension of a quantity
2113	無次元量	MUZIGEN-RYÔ	Quantity in the dimensional expression of which all the exponents of the dimensions of the base quantities reduce to zero.	dimensionless quantity, quantity of dimension one
2114	単位	TAN'I	Particular quantity, defined and adopted by convention, with which other quantities of the same kind are compared in order to express their magnitudes relative to that quantity.	unit
2115	単位系	TAN'I-KEI	Set of base units, together with derived units, defined in accordance with given rules, for a given system of quantities.	system of units
2116	基本単位	KIHON-TAN'I	The unit of base quantity in a system of units to be employed.	base unit
2117	組立単位	KUMITATE-TAN'I	The unit of derived quantity in a system of units to be employed.	derived unit
2118	一貫性のある単位系	IKKANSEI NO ARU-TAN'I-KEI	System of units of measurement in which all of the derived units are coherent.	coherent system of units
2119	国際単位系	KOKUSAI-TAN'I-KEI	The consistent system of units adopted and recommended at the General Conference of International Committee of Weights and Measures. This consists of base units, derived units constructed from these, and the prefixes of integer multiples of 10. Remarks : This is abbreviated as "SI".	International System of Units, SI
2120	測度	SOKUDO	A quantity or number to be used for the measure of a magnitude of quantity to be measured. In general, it has no universality.	measure
2121	(量の)値	(RYÔ NO) ATAI	Magnitude of a particular quantity generally expressed as a unit of measurement multiplied by a number.	value (of a quantity)

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2122	(量の)数値	(RYÔ NO) SÛTI	Quotient of the value of a quantity and the unit used in its expression.	numerical value (of a quantity)
2123	(測定)標準, エタロン	(SOKUTEI) HYÔZYUN, ETARON	Measuring instrument, material measure, reference material or measuring system intended to define, realize, conserve or reproduce a unit or one or more values of a quantity to serve as a reference.	(measurement) standard, etalon
2124	一次標準	ITIZI-HYÔZYUN	Standard that is designated or widely acknowledged as having the highest metrological qualities and whose value is accepted without reference to other standards of the same quantity. Remarks : The concept of primary standard is equally effective both to the base unit and the derived unit.	primary standard
2125	二次標準	NIZI-HYÔZYUN	Standard whose value is assigned by comparison with a primary standard of the same quantity.	secondary standard
2126	国際標準	KOKUSAI-HYÔZYUN	Standard recognized by an international agreement to serve internationally as the basis for assigning values to other standards of the quantity concerned.	international standard
2127	国家標準	KOKKA-HYÔZYUN	Standard recognized by a national decision to serve, in a country, as the basis for assigning values to other standards of the quantity concerned.	national standard
2128	参照標準	SANSYÔ-HYÔZYUN	Standard, generally having the highest metrological quality available at a given location or in a given organization, from which measurements made there are derived.	reference standard
2129	実用標準	ZITUYÔ-HYÔZYUN	Standard that is used routinely to calibrate or check measuring instruments, material measures or reference materials.	working standard
2130	仲介標準	TYÛKAI-HYÔZYUN	Standard used as an intermediary to compare standards.	transfer standard
2131	移動用標準	IDÔ-YÔ-HYÔZYUN	Standard, sometimes of special construction, intended for transport between different locations.	travelling standard

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2132	トレーサビリティ	TORÊSABIRITI	Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties.	traceability
2133	原器	GENKI	That thing expressing the magnitude itself of a base unit concretely.	prototype
2134	標準器	HYÔZYUN-KI	That thing expressing the magnitude, being expressed by a certain unit, concretely, and that is used as reference in measurements. This indicates measuring instrument and material measure given in the definition of (measurement) standard. Remarks : That is used as the reference of measuring in an official inspection or an inspection in a manufacturer is called verification standard.	(measurement) standard, etalon
2135	端度器	TANDO-KI	The standard of a length expressing the specified dimension by the face-to-face distance of both ends.	end standard
2136	線度器	SENDO-KI	The standard of a length expressing the specified dimension by the distance between the graduation lines which have been notched on a plane.	line standard
2137	標準物質	HYÔZYUN-BUSSITU	Material or substance one or more of whose property values are sufficiently homogeneous and well established to be used for the calibration of an apparatus, the assessment of a measurement method, or for assigning values to materials. Remarks : In some cases, this is also called the standard sample .	reference material (RM)
2138	認証標準物質	NINSYÔ-HYÔZYUN-BUSSITU	Reference material, accompanied by a certificate, one or more of whose property values are certified by a procedure which establishes traceability to an accurate realization of the unit in which the property values are expressed, and for which each certified value is accompanied by an uncertainty at a stated level of confidence.	certified reference material (CRM)

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2139	温度定点	ONDO-TEITEN	A temperature to be used as the reference of temperature scale.	fixed point of temperature

2) Objects of measurement

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2201	測定対象	SOKUTEI-TAISYÔ	A substance or phenomenon to be measured.	measuring object
2202	測定変量	SOKUTEI-HENRYÔ	Several kinds of quantities to be measured characterizing a measuring object.	variables to be measured
2203	測定量	SOKUTEI-RYÔ	That quantity which is the object of measurement. Remarks : In some cases, it means the measured quantity or the quantity to be measured .	measurand
2204	測定点	SOKUTEI-TEN	In the case where a measuring object has a spatial or temporal expanse, the position or time where or when an actual measurement is to be carried out.	point of measurement
2205	影響量	EIKYÔ-RYÔ	Other quantities than that of which purpose is for measurement, which impart influence on measured results.	influence quantity

3) Conditions of measurement

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2301	試験環境	SIKEN-KANKYÔ	An atmosphere in which the object is placed during testing.	test atmosphere
2302	ならし環境	NARASI-KANKYÔ	An equal atmosphere to the test atmosphere in which the object is held before testing.	conditioning atmosphere

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2303	標準環境	HYÔZYUN-KANKYÔ	An atmosphere which has been determined upon an agreement for use as reference, so that the test results under different atmosphere are allowed to be comparable with the results obtained under the same atmosphere.	reference atmosphere
2304	標準状態	HYÔZYUN-ZYÔTAI	a) Measuring conditions to be used as reference which have been determined upon an agreement, so that the measured results under different conditions are comparable as the results obtained under the same conditions. b) Conditions related to each influence quantity which have been specified for determining the intrinsic error of a measuring instrument. Remarks : The reference conditions are generally given by the reference value or reference range for one influence quantity, or the combination of reference values or reference ranges for two or more of influence quantities.	reference conditions

4) Types of measurement

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2401	直接測定	TYOKUSETU-SOKUTEI	Irrespective of the measurements of other quantities which are in functional relations with measuring quantities, a measurement to obtain the value of measuring quantity directly. Remarks : Even if it has been required to conduct compensating measurement which determines the value of influence quantity for the purpose of carrying out correction on the measured value, no change is pre- sented in the fact that this method is a direct measurement.	direct measurement

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2402	間接測定	KANSETU-SOKUTEI	After carrying out measurements on several quantities having a definite relation with the quantity to be measured, a measurement to introduce the measuring value therefrom.	indirect measurement
2403	基本測定法	KIHON-SOKUTEIHO	That measuring method to determine a certain quantity by measuring all of the base quantities related to that. Informative reference : This term is not used customarily in our country hitherto. It has been called the absolute measuring method together with the meaning of the definitive method of measurement.	fundamental method of measurement
2404	定義測定法	TEIGI-SOKUTEIHO	Method of measurement for a certain quantity according to the definition of unit of the quantity. Informative reference : This term is not used customarily in our country hitherto. It has been called the absolute measuring method together with the measuring of the fundamental method of measurement.	definitive method of measurement
2405	比較測定	HIKAKU-SOKUTEI	A measurement carried out by comparing with the quantity of the same kind.	comparison measurement
2406	静的測定	SEITEKI-SOKUTEI	The measurement of a quantity which can be considered to be that having a definite value during measurement. Remarks : The modifier "static" is not applicable to measuring method but is applicable to quantity to be measured.	static measurement
2407	動的測定	DÔTEKI-SOKUTEI	The measurement of the instantaneous value of fluctuating quantity, and, in some cases, the measurement of its temporal fluctuation. Remarks : The modifier "dynamic" is not applicable to measuring method but is applicable to quantity to be measured.	dynamic measurement

5) Constitution of measurement

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2501	遠隔測定	ENKAKU-SOKUTEI	A measurement conducted by detecting measurands and transmitting these to a remote receiver, after transferring into signals, by means of a transmitter.	telemetering
2502	零位法	REI-HÔ	Separately preparing a known quantity of the same kind of which quantity is adjustable, independent of a measurand, and allowing the known quantity to equilibrate with the measurand, a method to recognize the measurand from the magnitude of the known quantity at that time. However, the quantities to be equilibrated each other are, in some cases, also of those which have been introduced from the measurand and known quantity.	null method , zero method
2503	偏位法	HEN'I-HÔ	A method to recognize a measurand from the indication of the direct result caused by the measurand.	deflection method
2504	置換法	TIKAN-HÔ	A method to recognize a measurand from the measured results of two times by substituting the measurand with a known quantity.	substitution method
2505	合致法	GATTI-HÔ	A measuring method by observing the coincidence of graduation lines or the like and recognizing that a definite relation between the measurand and the quantity to be used as reference has been established.	coincidence method
2506	補償法	HOSHÔ-HÔ	A method to obtain a measurand by measuring the difference when a known quantity approximately equal to the measurand is subtracted from that.	compensation method
2507	差動法	SADÔ-HÔ	A measuring method by utilizing the difference between the actions of two quantities of the same kind.	differential method

6) Errors and accuracies

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2601	真の値	SIN NO ATAI	Value consistent with the definition of a given particular quantity (see Attached Fig. 1). Remarks : Excluding particular cases, this is an ideal value it is unattainable practically.	true value
2602	(取決めによる) 真の値	(TORIKIME NI YORU) SIN NO ATAI	Value attributed to a particular quantity and accepted, sometimes by convention, as having an uncertainty appropriate for a given purpose. Remarks : As regards a standard, a value which is presented by this actually.	conventional true value
2603	測定値	SOKUTEL-TI	That value which has been obtained by a measurement (see Attached Fig. 1).	measured value
2604	誤差	GOSA	That value subtracted by the true value from a measured value (see Attached Fig. 1). Remarks : The ratio of an error to the true value is called the relative error . However, in the case where it is not liable to be confused, it may also be called simply an error.	error
2605	かたより	KATAYORI	A subtracted value of population mean of measured value by a true value (see Attached Fig. 1).	bias
2606	ばらつき	BARATUKI	Unevenness of the magnitudes of measured values. Otherwise, the degree of irregularity. Remarks : In order to express the magnitude of dispersion, for example a term of "standard deviation" is used.	dispersion
2607	まちがい	MATIGAI	A mistake which has been committed by a measuring person unconsciously, or the measured value which has been obtained as the result.	mistake

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2608	系統誤差	KEITÔ-GOSA	An error which is originated due to the cause giving bias to the measured results.	systematic error
2609	偶然誤差	GŪZEN-GOSA	An error appearing as the dispersion of measured values being originated from an unidentifiable cause.	random error
2610	部分誤差	BUBUN-GOSA	Among the errors of values of quantities to be introduced indirectly from the values of several quantities, a part which is generated due to the error of individual quantity constituting those.	partial error
2611	合成誤差	GÔSEI-GOSA	That which has been composed of partial errors as the errors of the value being introduced indirectly from the values of several quantities.	resultant error
2612	総合誤差	SÔGÔ-GOSA	An overall error including all of the errors generated due to various factors.	overall error
2613	誤差限界	GOSA-GENKAI	The value of the limit of an estimated overall error.	limit of error
2614	不確かさ	HUTASIKASA	Parameter, associated with the result of a measurement, that characterizes the dispersion of the values that could reasonably be attributed to the measurand. Remarks 1 The parameter may be, for example, a standard deviation (or a given multiple of it), or the half-width of an interval having a stated level of confidence. 2 Uncertainty of measurement comprises, in general, many components. Some of these components may be evaluated from the statistical distribution of the results of series of measurements and can be characterized by experimental standard deviations. The other components, which also, can be characterized by standard deviations, are evaluated from assumed probability distributions based on experience or other information.	uncertainty