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JIS B 0155 : 1997

**Industrial-process measurement  
and control—  
Terms and definitions**

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ICS 01.040.25; 25.040.40

**Descriptors** : terminology, vocabulary, measurement, mechanical measurement,  
measuring instruments, control equipment, control systems, control  
devices, process control

**Reference number** : JIS B 0155 : 1997 (E)

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## 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 in accordance with the Industrial Standardization Law. Consequently **JIS B 0155 : 1986** is replaced with **JIS B 0155 : 1997**.

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# Industrial-process measurement and control— Terms and definitions

**Introduction** This Japanese Industrial Standard has been prepared based on the first edition of **IEC 902** *Industrial-process measurement and control—Terms and definitions* published in 1987 without changing the corresponding parts, however, some terms are supplemented which are not stated in the said **IEC** Standard.

The terms not having **IEC** term number in the **IEC** No. column in clause 3 are not stated in the said **IEC** Standard.

**1 Scope** This Japanese Industrial Standard specifies terms and definitions in industrial-process measurement and control in mining and manufacturing industries.

Note : The corresponding International Standard to this Standard is as follows.

IEC 902 : 1987 *Industrial-process measurement and control—Terms and definitions*

**2 Classification** The terms are classified as follows.

**a) General terms**

- 1) **Fundamental general terms**
- 2) **Data and signal terms**
- 3) **Static and dynamic behavior terms**
  - 3.1) **General static and dynamic behavior terms**
  - 3.2) **Step and ramp response terms**
  - 3.3) **Frequency response terms**

**b) Functional terms**

- 1) **General functional terms**
- 2) **Signal and communication terms**
- 3) **Measurement terms**
  - 3.1) **General measurement terms**
  - 3.2) **Measuring range terms**
  - 3.3) **Response and calibration terms**
- 4) **Control terms**
  - 4.1) **General control terms**
  - 4.2) **Control element and system terms**
  - 4.3) **Control signal and variable terms**
  - 4.4) **Control action characteristic terms**
  - 4.5) **Control system characteristics and stability terms**

c) **Hardware terms**

- 1) **General hardware terms**
- 2) **Measurement hardware terms**
  - 2.1) **Temperature measurement hardware terms**
  - 2.2) **Pressure measurement hardware terms**
  - 2.3) **Flow measurement hardware terms**
  - 2.4) **Level measurement hardware terms**
  - 2.5) **Position and motion measurement hardware terms**
  - 2.6) **Composition measurement hardware (analytical) terms**
  - 2.7) **Miscellaneous measurement hardware terms**
- 3) **Control and calculating hardware terms**
  - 3.1) **Control hardware terms**
  - 3.2) **Calculating hardware terms**
- 4) **Final controlling element terms**
- 5) **Monitoring hardware terms**
- 6) **Accessory hardware terms**
- 7) **Constructional hardware terms**

d) **Digital technology terms**

- 1) **Digital control system terms**
- 2) **Digital communication terms**
- 3) **Terms related to assurance procedures**

e) **Terms related to tests and procedures**f) **Operating condition terms**

- 1) **General operating condition terms**
- 2) **Operating condition terms related to temperature, humidity and barometric pressure**
- 3) **Operating condition terms related to energy supply**
- 4) **Operating condition terms related to mechanical influences**
- 5) **Operating condition terms related to corrosive and erosive influences**
- 6) **Operating condition terms related to electromagnetic compatibility**

**3 Terms and definitions** Terms and definitions are as follows.

Term numbers in the corresponding International Standard are shown in the column of "IEC No." for informative reference.

Note : When two or more terms exist for one definition, divided with comma(s), the terms shall preferentially be used in the order mentioned.

## a) General terms

## 1) Fundamental general terms

| No.   | Term<br>(Japanese<br>character) | Reading           | Definition                                                                                                                                                                                                                                                                                                          | English equivalent | IEC No.   |
|-------|---------------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|
| 11001 | システム,<br>系                      | SISUTEMU,<br>KEI  | Set of interdependent elements constituted to achieve a given objective by performing a definite function.<br>Note : "System" may be considered to be "equipment".                                                                                                                                                  | system             | P1.0.0.01 |
| 11002 | 計測                              | KEISOKU           | A set of operations for the purpose of determining the value of a quantity.<br>Note : "Measurement" may refer to the set of operations based on the standard officially specified.                                                                                                                                  | measurement        | P1.0.0.02 |
| 11003 | 制御                              | SEIGYO            | Purposeful action on or in a system, to meet specified objectives.<br>Notes 1 Control may also refer to monitoring and securing as well as the control action itself.<br>2 "Adjustment" may be used as same meaning as "control" in industrial-process.                                                             | control            | P1.0.0.03 |
| 11004 | 制御系                             | SEIGYO-KEI        | A system in which deliberate guidance or manipulation of one or more variables is used to achieve a prescribed state.                                                                                                                                                                                               | control system     | P1.0.0.04 |
| 11005 | 線形系                             | SENKEI-KEI        | System which can be described by a set of linear equations.                                                                                                                                                                                                                                                         | linear system      | P1.0.0.05 |
| 11006 | 工業プロセス                          | KÔGYÔ<br>PUROSESU | Single or a set of operations which basically perform a physical or chemical transformation or a series of such transformations.<br>Note : Other process such as transportation and/or temporary storage of matter or energy, transmission of information, etc., may be considered as a part of industrial process. | industrial process | P1.0.0.06 |
| 11007 | オンライン                           | ON-RAIN           | When equipment or devices operate on-line to an industrial process, they act upon the industrial process and/or are acted upon by this process in the actual time in which the process takes place.                                                                                                                 | on-line            | P1.0.0.07 |
| 11008 | オフライン                           | OHU-RAIN          | When equipment or devices operate off-line to an individual process, they are associated with this industrial process, but do not act on the process or are not acted upon by this process during the actual time in which the process takes place.                                                                 | off-line           | P1.0.0.08 |

| No.   | Term<br>(Japanese<br>character) | Reading             | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | English equivalent         | IEC No.   |
|-------|---------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------|
| 11009 | プロセス計測                          | PUROSESU<br>KEISOKU | The acquisition of information that establishes the value of process variable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | process<br>measurement     | P1.0.0.09 |
| 11010 | プロセス制御                          | PUROSESU<br>SEIGYO  | The manipulation of variables influencing the behavior of a process in order to meet specified objectives.                                                                                                                                                                                                                                                                                                                                                                                                                                                                | process control            | P1.0.0.10 |
| 11011 | 技術仕様                            | GIZYUTU SIYÔ        | A document which lays down characteristics of a product or a series such as levels of quality, performance, safety, dimensions.<br>Note : It may include terms and definitions, symbols, testing and test methods, packing, marking or labeling requirements. A technical specification may also take the form of a code of practice.                                                                                                                                                                                                                                     | technical<br>specification | P1.0.0.11 |
| 11012 | 標準仕様                            | HYÔZYUN SIYÔ        | A technical specification or other document available to the public aimed at the promotion of optimum community benefits and approved by a body recognized on the national, regional, or international level.<br>Notes 1 Standard specifications are developed with the corporation and the consensus or general approval of interests affected by it based on the consolidated result of science, technology and experience.<br>2 In some language the word "standard" is often used with a meaning other than that in this definition, for example, "company standard". | standard<br>specification  | P1.0.0.12 |
| 11013 | 計測標準                            | KEISOKU<br>HYÔZYUN  | A material measure, measuring instrument or system intended to define, realize, conserve or reproduce a unit of one or more known values of quantity in order to transfer them to other measuring instruments by comparison and calibration.<br>Examples 1 1 kg mass standard<br>2 Standard gauge block<br>3 100 ohm standard resistor<br>4 Saturated Weston standard cell<br>5 Standard ammeter<br>6 Caesium atomic frequency standard                                                                                                                                   | measurement<br>standard    | P1.0.0.13 |

| No.   | Term<br>(Japanese<br>character) | Reading             | Definition                                                                                                                                                                                                                                                                                                                                                                                                 | English equivalent | IEC No.   |
|-------|---------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|
| 11014 | アルゴリズム                          | ARUGORIZUMU         | A set of well-defined rules for the solution of a problem in a finite number of steps.                                                                                                                                                                                                                                                                                                                     | algorithm          | P1.0.0.14 |
| 11015 | パラメタ                            | PARAMETA            | A quantity describing the relation of variables within a given system.<br>Note : A parameter may be a constant or depend on the time or the magnitude of some system variables.                                                                                                                                                                                                                            | parameter          | P1.0.0.15 |
| 11016 | 構成                              | KÔSEI               | a) (Hardware) A step in system design: selecting modules, assigning their locations and defining their interconnection.<br>b) (Software) In a system or a device in which logic modules are pre-loaded, selecting required modules, assigning them to appropriate logical locations (e.g. control loop, display point, etc.) and linking them.<br>Note : This term is used for both hardware and software. | configuration      | P1.0.0.16 |
| 11017 | シミュレーション                        | SIMYURÊSYON         | Representing characteristics of a particular action in the physical or abstract system by another system.<br>Examples 1 Representing physical phenomena by means of calculation by a data-processing system.<br>2 Representing calculations of the data-processing system by another data-processing system.                                                                                               | simulation         |           |
| 11018 | プログラム                           | PUROGURAMU          | A series of actions proposed in order to achieve a certain result.                                                                                                                                                                                                                                                                                                                                         | program            | P1.0.0.17 |
| 11019 | 決定表                             | KETTEL-HYÔ          | A table of contingencies to be considered in the definition of a problem, together with the actions to be taken.<br>Note : Sometimes used in place of a flow chart for program documentation.                                                                                                                                                                                                              | decision table     | P1.0.0.18 |
| 11020 | 流れ図                             | NAGARE-ZU           | A graphical representation of the definition, analysis or solution method of a problem.<br>Note : Symbols are used to represent operations, data flow, equipment, etc.                                                                                                                                                                                                                                     | flow chart         | P1.0.0.19 |
| 11021 | フローチャート                         | HURÔ<br>DAIYAGURAMU | A pictorial representation describing an industrial process.                                                                                                                                                                                                                                                                                                                                               | flow diagram       | P1.0.0.20 |

| No.   | Term<br>(Japanese<br>character) | Reading            | Definition                                                                                                                                                                                                                                                                                                                                               | English equivalent | IEC No.   |
|-------|---------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|
| 11022 | ブラックボックス                        | BURAKKU<br>BOKKUSU | A generic term used to describe a device which performs a certain function for which only the input and output signals are known.                                                                                                                                                                                                                        | black box          | P1.0.0.21 |
| 11023 | 機能ブロック                          | KINÔ BUROKKU       | A system or part of a system having input and output variables, which are represented functional relationships by symbols in a rectangle.<br>Note : Functional relationships are shown in the form of arithmetic instruction, transfer functions, differential and difference equations, characteristic curves or their groups, or changeover functions. | functional block   | P1.0.0.22 |
| 11024 | ブロック線図                          | BUROKKU<br>SENZU   | A diagram in which a system or part of a system, together with its internal functional relationships, is represented by functional blocks linked by oriented connections which represent the signal flow.<br>Note : All connections of functional blocks are not necessarily required.                                                                   | block diagram      | P1.0.0.23 |
| 11025 | 初期化                             | SYOKIKA            | Originating or establishing basic or startup state.                                                                                                                                                                                                                                                                                                      | initialization     | P1.0.0.24 |
| 11026 | モジュラリティ                         | MOZYURARITI        | The property of functional flexibility built into a system by assembling discrete units to be able to be easily joined to or arranged with other parts or units.                                                                                                                                                                                         | modularity         | P1.0.0.25 |
| 11027 | デバイス                            | DEBAISU            | An apparatus or hardware element for performing a prescribed function.                                                                                                                                                                                                                                                                                   | device             | P1.0.0.26 |
| 11028 | 構成要素                            | KÔSEI YÔSO         | A minimal functional element composing a system.                                                                                                                                                                                                                                                                                                         | component          |           |
| 11029 | オペレータ                           | OPERÊTA            | The person who initiates and monitors the operation of a technical process and/or its controlling system.                                                                                                                                                                                                                                                | operator           | P1.0.0.27 |
| 11030 | 補償                              | HOSYÔ              | Counteractive effect to sources of error due to variations in specified operating conditions.<br>Example : The effect is obtained by a special construction, supplementary device, circuit, special materials, etc.                                                                                                                                      | compensation       | P1.0.0.28 |
| 11031 | 互換性                             | GOKANSEI           | The capability of a functional unit to meet the requirements of a specified interface.                                                                                                                                                                                                                                                                   | compatibility      | P1.0.0.29 |

## 2) Data and signal terms

| No.   | Term<br>(Japanese<br>character) | Reading          | Definition                                                                                                                                                                                                                                                      | English equivalent  | IEC No.   |
|-------|---------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------|
| 12001 | データ                             | DÊTA             | Characters or continuous functions representing information.                                                                                                                                                                                                    | data                | P1.1.0.01 |
| 12002 | アナログデータ                         | ANAROGU DÊTA     | Data consisting only of continuous functions.                                                                                                                                                                                                                   | analogue data       | P1.1.0.02 |
| 12003 | デジタルデータ                         | DIZITARU DÊTA    | Numerical or literal data.                                                                                                                                                                                                                                      | digital data        | P1.1.0.03 |
| 12004 | 変量                              | HENRYÔ           | A quantity or condition whose value is subject to change and can usually be measured.                                                                                                                                                                           | variable            | P1.1.0.04 |
| 12005 | 信号                              | SINGÔ            | Physical variable, one or more parameters of which carry information about one or more variables.<br>Note : These parameters are called "information parameters".                                                                                               | signal              | P1.1.0.05 |
| 12006 | アナログ信号                          | ANAROGU SINGÔ    | A signal the information parameter of which may assume continuous value.                                                                                                                                                                                        | analogue signal     | P1.1.0.06 |
| 12007 | 統一信号                            | TÔITU SINGÔ      | A signal the range values of which are standardized.<br>Example : 4 mA d.c. to 20 mA d.c. Current signal,<br>20 kPa to 100 kPa Air pressure signal                                                                                                              | standardized signal | P1.1.0.07 |
| 12008 | デジタル信号                          | DIZITARU SINGÔ   | A signal the information parameter of which may assume any value out of a set of discrete values represented by numbers.                                                                                                                                        | digital signal      | P1.1.0.08 |
| 12009 | 入力信号                            | NYÛRYOKU SINGÔ   | A signal applied to a device, element or system.                                                                                                                                                                                                                | input signal        | P1.1.0.09 |
| 12010 | 出力信号                            | SYÛTURYOKU SINGÔ | A signal delivered by a device, element or system.                                                                                                                                                                                                              | output signal       | P1.1.0.10 |
| 12011 | 量子化                             | RYÔSIKA          | Process by which the range of a variable is divided into a finite number of distinct sub-ranges not necessarily equal, each of which is represented by an assigned value.<br>Note : The assigned value in the distinct sub-ranges is named the quantized value. | quantization        | P1.1.0.11 |

| No.   | Term<br>(Japanese<br>character) | Reading       | Definition                                                                                                                                                                                                                                                                                         | English equivalent | IEC No.   |
|-------|---------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|
| 12012 | 量子化信号                           | RYÔSIKA SINGÔ | Signal represented by quantized values.                                                                                                                                                                                                                                                            | quantized signal   | P1.1.0.12 |
| 12013 | 2値信号                            | NITI SINGÔ    | Quantized signal with only two possible values.                                                                                                                                                                                                                                                    | binary signal      | P1.1.0.13 |
| 12014 | レンジ                             | RENZI         | The region of the values between the lower and upper limits of the quantity under consideration (see Attached Fig. 1).<br>Note: The term "range" is usually used with such modifier as a measured variable or the operating conditions.                                                            | range              | P1.1.0.14 |
| 12015 | スパン                             | SUPAN         | The algebraic difference between the upper and lower limit values of a given range.<br>Examples 1 range 0 °C to 150 °C, span 150 °C<br>2 range -20 °C to 200 °C, span 220 °C<br>3 range 20 °C to 150 °C, span 130 °C<br>4 range 4 mA to 20 mA, span 16 mA<br>5 range -100 °C to -20 °C, span 80 °C | span               | P1.1.0.15 |

### 3) Static and dynamic behavior terms

#### 3.1) General static and dynamic behavior terms

| No.   | Term<br>(Japanese<br>character) | Reading     | Definition                                                                                                                               | English equivalent | IEC No.   |
|-------|---------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|
| 13101 | 時間応答                            | ZIKAN ÔTÔ   | The variation with time of an output variable of a system, produced by a specified variation of one of the input variables.              | time response      | P1.2.0.01 |
| 13102 | ステップ応答                          | SUTEPPU ÔTÔ | The time response of a system produced by a stepwise variation of one of the input variables (see Attached Fig. 2).                      | step response      | P1.2.0.02 |
| 13103 | ランプ応答                           | RANPU ÔTÔ   | The time response resulting from a stepwise increase from zero to some finite value in the rate of change of one of the input variables. | ramp response      | P1.2.0.03 |

| No.   | Term<br>(Japanese<br>character) | Reading            | Definition                                                                                                                                                                                                                                                                                                                                  | English equivalent  | IEC No.   |
|-------|---------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------|
| 13104 | インパルス応答                         | INPARUSU ÔTÔ       | The time response of a system produced by the application of an impulse function on one of the inputs.<br>Note: For a linear system the unit impulse response (weighting function) is the time derivative of the unit step response.                                                                                                        | impulse response    | P1.2.0.04 |
| 13105 | 定常状態                            | TEIZYÔ ZYÔTAI      | The state of an element and a system in which transient influence is gone and all input variables are constant.                                                                                                                                                                                                                             | steady state        | P1.2.0.05 |
| 13106 | 過渡状態                            | KATO ZYÔTAI        | The behavior of a variable during transition between two steady states.                                                                                                                                                                                                                                                                     | transient           | P1.2.0.06 |
| 13107 | ラプラス変換                          | RAPURASU<br>HENKAN | The transform of a function $f(t)$ to a function $F(s)$ of a complex variable $s$ , given by:<br>$F(s) = \int_0^{\infty} f(t) e^{-st} dt$                                                                                                                                                                                                   | Laplace transform   | P1.2.0.07 |
| 13108 | フーリエ変換                          | HÔRIE<br>HENKAN    | The transform of a function $f(t)$ to a function $F(j\omega)$ of a real variable $\omega$ , given by:<br>$F(j\omega) = \int_{-\infty}^{\infty} f(t) e^{-j\omega t} dt$                                                                                                                                                                      | Fourier transform   | P1.2.0.08 |
| 13109 | 伝達関数                            | DENTATU<br>KANSÛ   | In a time-unchanged linear system, the ratio of the Laplace transform of an output signal to the Laplace transform of the corresponding input signal with all initial conditions zero.                                                                                                                                                      | transfer function   | P1.2.0.09 |
| 13110 | 周波数応答                           | SYÔHASÛ ÔTÔ        | In a linear system in steady state applied a sinusoidal input signal, the ratio of the rotating vector of the output signal to the corresponding input signal given by the function of an angle frequency $\omega$ .<br>Note: The frequency response coincides with the transfer function taken on the imaginary axis of the complex plane. | frequency response  | P1.2.0.10 |
| 13111 | 記述関数                            | KIZYUTU<br>KANSÛ   | For a non-linear element in steady state, with a sinusoidal input signal, the frequency response obtained by taking only the fundamental sinusoidal component of the output signal.<br>Note: The describing function may depend on the frequency and on the amplitude of the input signal, or only on the amplitude of the input signal.    | describing function | P1.2.0.11 |

| No.   | Term<br>(Japanese<br>character) | Reading           | Definition                                                                                                                                                                                                                                                                                                                                                                     | English equivalent | IEC No.   |
|-------|---------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|
| 13112 | 安定性                             | ANTEISEI          | For a system, the property such that, after having been displaced from its steady-state conditions by an external disturbance, it comes back to those steady-state conditions.<br>Note : In a linear system, it comes back to those steady state conditions when the disturbance has ceased.                                                                                   | stability          | P1.2.0.12 |
| 13113 | ゲイン                             | GEIN              | The ratio of the amplitude of the output signal to the corresponding sinusoidal input signal for a linear system in steady state.<br>Notes 1 The gain is the factor (absolute value) of the frequency response at a frequency.<br>2 In practical use the gain at frequencies other than zero is often called "dynamic gain" as opposed to the "static gain" at frequency zero. | gain               | P1.2.0.13 |
| 13114 | 対数ゲイン                           | TAISŪ GEIN        | The gain in logarithmic value.<br>Note : Logarithmic gain is shown in decibels and $20 \cdot \log_{10} G$ (dB), where $G$ is the gain (see Attached Fig. 3).                                                                                                                                                                                                                   | logarithmic gain   | P1.2.0.14 |
| 13115 | 減衰                              | GENSUI            | The diminution of the magnitude of a signal due to the impedance of a circuit or distance of transmission.<br>Note : The attenuation may be expressed as a dimensionless ratio, scalar ratio, or in 20 times logarithmic these value (decibels).                                                                                                                               | attenuation        | P1.2.0.15 |
| 13116 | 位相角                             | ISŌKAKU           | For a linear system in sinusoidal steady state, phase difference between the output signal and the corresponding input signal (see Attached Fig. 3).<br>Note : The phase angle is the argument of the frequency response.                                                                                                                                                      | phase angle        | P1.2.0.16 |
| 13117 | 伝達遅れ                            | DENTATU OKURE     | A delay attributable to the time taken in transporting material or to the finite rate of propagation of a signal.                                                                                                                                                                                                                                                              | transport delay    | P1.2.0.17 |
| 13118 | むだ時間                            | MUDA-ZIKAN        | Time interval between the instant when the variation of an input variable is produced and the instant when the consequent variation of the output variable starts (see Attached Fig. 2).                                                                                                                                                                                       | dead time          | P1.2.0.18 |
| 13119 | ステップ応答時間                        | SETEPPU ŌTŌ ZIKAN | Time interval between the instant when the input is stepped up and the instant when the output reaches the specified ratio of total rise (see Attached Fig. 2).                                                                                                                                                                                                                | step response time |           |

| No.   | Term<br>(Japanese<br>character) | Reading          | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | English equivalent          | IEC No.   |
|-------|---------------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------|
| 13120 | 時定数                             | ZI-TEISŪ         | <p>The time required to complete 63.2 % of the total rise of the output of a first-order linear system, initiated by a step to the input.</p> <p>Notes 1 Such a time response is described by <math>A(1 - e^{-t/T})</math> or <math>Ae^{-t/T}</math> (according to the case) where <math>T</math> is the time constant.</p> <p>2 In a higher order system, there is a time constant for each of the first order components of the process. In a Bode diagram, corner frequencies appear at <math>\omega = 1/T</math>.</p> | time constant               | P1.2.0.19 |
| 13121 | 制動(振動の)                         | SEIDŌ (SINDŌ NO) | Progressive reduction with time of the amplitude of an oscillation due to loss of energy.                                                                                                                                                                                                                                                                                                                                                                                                                                 | damping (of an oscillation) | P1.2.0.20 |
| 13122 | 制動比                             | SEIDŌ-HI         | For the free oscillation of a second-order linear system, the progressive reduction ratio of the amplitude.                                                                                                                                                                                                                                                                                                                                                                                                               | damping ratio               | P1.2.0.21 |

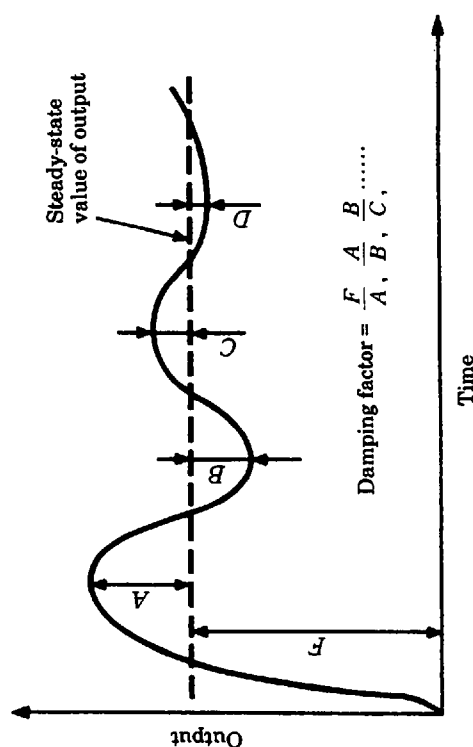


Fig. 1 Damped response of a system with second-order lag

| No.   | Term<br>(Japanese<br>character) | Reading               | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | English equivalent         | IEC No.   |
|-------|---------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------|
| 13123 | 自然固有周波数                         | SIZEN KOYŪ<br>SYŪHASŪ | The angle frequency $\omega_0$ for a linear system of the second order described by the differential equation:<br>$\frac{d^2x}{dt^2} + 2D\omega_0 \frac{dx}{dt} + \omega_0^2 x = 0$                                                                                                                                                                                                                                                                                                                                                                                                                                | natural inherent frequency | P1.2.0.22 |
| 13124 | 制動係数                            | SEIDŌ KEISŪ           | The value of the factor $D$ for a linear system of the second order described by the differential equation:<br>$\frac{d^2x}{dt^2} + 2D\omega_0 \frac{dx}{dt} + \omega_0^2 x = 0$                                                                                                                                                                                                                                                                                                                                                                                                                                   | damping factor             | P1.2.0.23 |
| 13125 | 固有周波数                           | KOYŪ SHŪHASŪ          | The apparent frequency $\omega_e$ of the step response of a linear second-order system with damping ratio $D$ ,<br>$h(t) = 1 - e^{-D\omega_0 t} \left[ \cos(\omega_0 \sqrt{1-D^2} t) + \frac{D}{\sqrt{1-D^2}} \sin(\omega_0 \sqrt{1-D^2} t) \right]$ being related to the natural inherent frequency $\omega_0$ by:<br>$\omega_e = \omega_0 \sqrt{1-D^2}$<br>Note: The described step response is given by a second-order system with the differential equation:<br>$\frac{1}{\omega_0^2} \cdot \frac{d^2x(t)}{dt^2} + \frac{2D}{\omega_0} \cdot \frac{dx(t)}{dt} + x(t) = v(t)$ for stepwise changing of $v(t)$ . | eigen frequency            | P1.2.0.24 |
| 13126 | 共振周波数                           | KYŌSIN<br>SYŪHASŪ     | The frequency $\omega_r$ of a sinusoidal input signal which coincides with an inherent frequency of the system thus producing an extra large output.<br>Note: For a linear system the transfer function of which includes an element described by the differential equation:<br>$\frac{1}{\omega_0^2} \cdot \frac{d^2x(t)}{dt^2} + \frac{2D}{\omega_0} \cdot \frac{dx(t)}{dt} + x(t) = v(t)$                                                                                                                                                                                                                       | resonance frequency        | P1.2.0.25 |

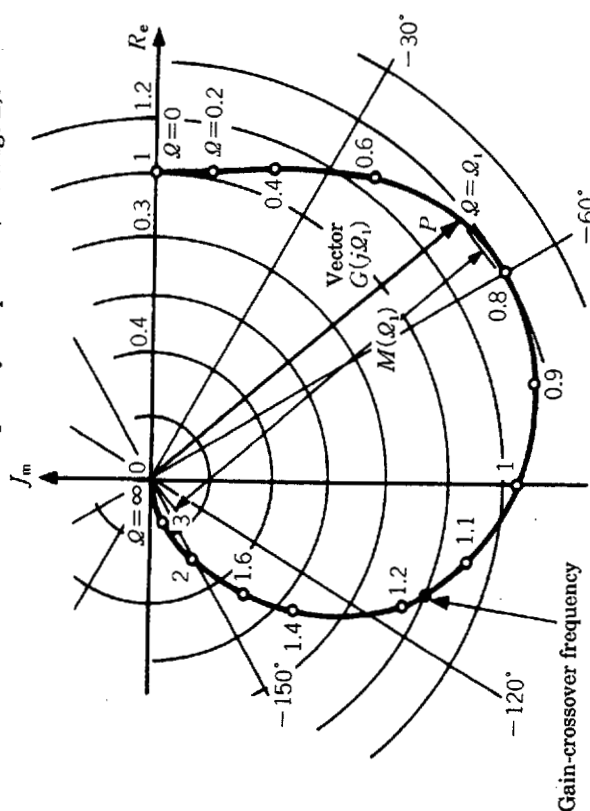
| No. | Term<br>(Japanese<br>character) | Reading | Definition                                                                                                                                                                                | English equivalent | IEC No. |
|-----|---------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------|
|     |                                 |         | the gain of the corresponding frequency response has a maximum at $\omega_r$ , which is related to the natural inherent frequency $\omega_0$ by:<br>$\omega_r = \omega_0 \sqrt{1 - 2D^2}$ |                    |         |

### 3.2) Step and ramp response terms

| No.   | Term<br>(Japanese<br>character) | Reading                          | Definition                                                                                                                                                                                                                                                                                                                              | English equivalent  | IEC No.   |
|-------|---------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------|
| 13201 | 過渡行過ぎ量,<br>オーバーシュート             | KATO<br>YUKISUGIRYÔ,<br>ÔBÂSYÛTO | For a step response, the maximum transient deviation from the final steady-state value of the output variable, expressed in % of the difference between the final and the original steady-state values (see Attached Fig. 2).                                                                                                           | transient overshoot | P1.2.1.01 |
| 13202 | 立ち上がり時間                         | TATIAGARI<br>ZIKAN               | For a step response, the time interval between the instant when the output signal reaches a small specified percentage of the final steady-state value, and the instant when it reaches for the first time a specified large percentage of the same steady-state value (for instance 10 % to 90 %, 5 % to 95 %). (See Attached Fig. 2). | rise time           | P1.2.1.02 |
| 13203 | 整定時間                            | SEITEI ZIKAN                     | Time interval between the step change of an input signal and the instant when the resulting variation of the output signal does not deviate more than a specified tolerance (for instance $\pm 5$ %) from its final steady-state value.                                                                                                 | settling time       | P1.2.1.03 |
| 13204 | ランプ応答時間                         | RANPU ÔTÔ<br>ZIKAN               | The time interval beginning at the application of ramp input, necessary for the output variable to remain in a specified tolerance band around values (for instance $\pm 5$ %), which are the input values multiplied by the static gain minus steady-state deviation of first order of the output variable.                            | ramp response time  | P1.2.1.04 |

### 3.3) Frequency response terms

| No.   | Term<br>(Japanese<br>character) | Reading                                         | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                   | English equivalent                         | IEC No.   |
|-------|---------------------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------|
| 13301 | ボード線図                           | BÔDO SENZU                                      | <p>A set of two graphical representations of the frequency response <math>G(j\omega)</math>, that are logarithmic gain (often shown in the unit of dB) and phase angle shown on the vertical axis as function of the frequency shown on the horizontal axis which is usually represented on a logarithmic scale (see Attached Fig. 3).</p> <p>Note : The former is called "gain diagram" and the latter is called "phase angle diagram".</p> | Bode diagram                               | P1.2.2.01 |
| 13302 | 周波数応答<br>極座標プロット                | SYÔHASÛ ÔTÔ<br>KISEKI,<br>KYOKUZAHYÔ<br>PUROTTO | <p>Graphic representation of a frequency response in the complex plane, with values of <math>\omega</math> between 0 and infinity as a parameter and where the radius vector is the modulus of the frequency response and the corresponding polar angle is the phase angle of the frequency response (see Fig. 2).</p>                                                                                                                       | frequency response<br>locus,<br>polar plot | P1.2.2.02 |



Polar plot for  $G(j\Omega) = 1/[1 + 2Dj\Omega + (j\Omega)^2]$ , with  $D = 0.4$ ,  $\Omega = \omega T$ , where  $\Omega = \omega T$  = normalized frequency

Fig. 2 Frequency response locus

| No.   | Term<br>(Japanese<br>character) | Reading               | Definition                                                                                                                                                   | English equivalent           | IEC No.   |
|-------|---------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------|
| 13303 | ゲイン交点周波数                        | GEIN KÔTEN<br>SYÔHASÛ | In a Bode diagram or a polar plot, the frequency at which the gain becomes unity (see Fig. 2).                                                               | gain-crossover<br>frequency  | P1.2.2.04 |
| 13304 | コーナ周波数                          | KÔNA SYÔHASÛ          | In the asymptotic form of a Bode diagram, that frequency indicated by the junction of two confluent straight lines asymptotic to the logarithmic gain curve. | corner frequency             | P1.2.2.05 |
| 13305 | 位相交点周波数                         | ISÔ KÔTEN<br>SYÔHASÛ  | In a Bode diagram or a polar plot, the frequency at which the phase angle becomes $\pm 180^\circ$ .                                                          | phase crossover<br>frequency | P1.2.2.06 |

## b) Functional terms

## 1) General functional terms

| No.   | Term<br>(Japanese<br>character)   | Reading                             | Definition                                                                                                                                                                                                                                    | English equivalent                          | IEC No.   |
|-------|-----------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-----------|
| 21001 | 性能特性                              | SEINÔ TOKUSEI                       | The tabulation of those pertinent parameters and their quantification which define the functions and capabilities of a device under static or dynamic conditions or as a result of a specific test.                                           | performance<br>characteristics              | P2.0.0.01 |
| 21002 | 基準性能特性                            | KIZYUN SEINÔ<br>TOKUSEI             | Performance characteristics attained under reference operating conditions.                                                                                                                                                                    | reference<br>performance<br>characteristics | P2.0.0.02 |
| 21003 | 製品仕様                              | SEIHIN SIYÔ                         | The tabulation of performance and other characteristics which describe a specific product.                                                                                                                                                    | product<br>specification                    | P2.0.0.03 |
| 21004 | レンジアビリティ,<br>テイ,<br>ターンダウンレ<br>シオ | RENZI ABIRITI,<br>TÂN DAUN<br>RESIO | The ratio of the maximum span to the minimum span to which an instrument or device can be calibrated within the specified accuracy rating.<br>Example: If the span of a device is adjustable from 10 to 90, its rangeability is $90/10 = 9$ . | range ability,<br>turn-down ratio           | P2.0.0.04 |

| No.   | Term<br>(Japanese<br>character) | Reading                                       | Definition                                                                                                                                                  | English equivalent                    | IEC No.   |
|-------|---------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------|
| 21005 | 1点当たり時間                         | ITTEN-ATARI<br>ZIKAN                          | The time interval between consecutive points on a multi-point recorder.                                                                                     | time per point                        | P2.0.0.05 |
| 21006 | 走査速度                            | SÔSA SOKUDO                                   | The rate of interrogation of a series of analogue input channels expressed in terms of input channels per second.                                           | scan rate                             | P2.0.0.06 |
| 21007 | サンプリング周<br>期,<br>サンプリング間<br>隔   | SANPURINGU<br>SYÜKI,<br>SANPURINGU<br>KANKAKU | The time interval between periodic samplings of continuous timing signals.                                                                                  | sampling period,<br>sampling interval | P2.0.0.07 |
| 21008 | 再訪率                             | SAIHO-RITU                                    | The frequency (in conversions per second) at which a single analogue input channel is assessed and converted to a digital value within the stated accuracy. | revisit rate                          | P2.0.0.08 |
| 21009 | ウォームアップ<br>時間                   | WUÔMU-APPU<br>ZIKAN                           | The time required after energizing a device before its rated performance characteristics apply.                                                             | warm-up period                        | P2.0.0.09 |

## 2) Signal and communication terms

| No.   | Term<br>(Japanese<br>character) | Reading                 | Definition                                                                                                                   | English equivalent     | IEC No.   |
|-------|---------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------|
| 22001 | 信号ひずみ                           | SINGÔ HIZUMI            | Any undesired change in a specified signal pattern.                                                                          | distortion             | P2.1.1.01 |
| 22002 | 雑音                              | ZATUON                  | Unwanted disturbances superimposed upon a signal that tend to obscure its information content.                               | noise                  | P2.1.1.02 |
| 22003 | フィードオー<br>バー,<br>クロストーク         | FIDO-ÔBÂ,<br>KUROsutôKU | Unwanted disturbances in a circuit caused by undesired energy in another circuit.                                            | feedover,<br>crosstalk | P2.1.1.03 |
| 22004 | シグナルコモン                         | SIGUNARU<br>KOMON       | A common electrical connection of a number of signal circuits.<br>Note : This signal common is sometimes connected to earth. | signal common          | P2.1.1.04 |

| No.   | Term<br>(Japanese<br>character) | Reading                                         | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                           | English equivalent                                    | IEC No.   |
|-------|---------------------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-----------|
| 22005 | 信号絶縁                            | SINGÓ ZETUEN                                    | The absence of interference between the signal circuits and all other circuits and earth.<br>Note : The interference can be electrical, electromagnetic, electrostatic, thermal, etc., depending on the nature of the signal.                                                                                                                                                                                                                                        | signal isolation                                      | P2.1.1.05 |
| 22006 | 信号対雑音比,<br>SN比,<br>S/N          | SINGÓ TAI<br>ZATUON-HI,<br>SN-HI,<br>S/N        | Ratio of signal amplitude to noise amplitude usually expressed in dB.<br>Note : For sinusoidal signals, amplitude may be peak or r.m.s., and for non-sinusoidal signals, peak values should be used.                                                                                                                                                                                                                                                                 | signal to noise<br>ratio                              | P2.1.1.06 |
| 22007 | コモンモード信<br>号                    | KOMON MÓDO<br>SINGÓ                             | A signal of the same amplitude and phase occurring simultaneously on both sides of a differential input relative to a common reference.<br>For example: common-mode voltage.                                                                                                                                                                                                                                                                                         | common mode<br>signal                                 | P2.1.1.07 |
| 22008 | コモンモード除<br>去                    | KOMON MÓDO<br>ZYOKYO                            | The ability of a system or a device to suppress the effect of a common-mode input signal on its output.                                                                                                                                                                                                                                                                                                                                                              | common mode<br>rejection                              | P2.1.1.08 |
| 22009 | コモンモード除<br>去率,<br>CMRR          | KOMON MÓDO<br>ZYOKYO-RITU,<br>CMRR              | The ratio of a specified common-voltage signal at the input of a system or device to the differential input signal with the same characteristic type required to produce the same output signal. For amplifiers, the effect of common-mode interference is converted into a input signal.<br>Note : The common-mode rejection ratio may be expressed as a ratio or in decibels as 20 times the log of that numeric ratio, and may depend on frequency and amplitude. | common mode<br>rejection ratio                        | P2.1.1.09 |
| 22010 | シリーズモード<br>信号,<br>ノーマルモード<br>信号 | SIRÍZU MÓDO<br>SINGÓ,<br>NÓMARU MÓDO<br>SINGÓ   | Unwanted differential signal across the input terminals of a system or device.                                                                                                                                                                                                                                                                                                                                                                                       | series mode signal,<br>normal mode signal             | P2.1.1.10 |
| 22011 | シリーズモード<br>除去,<br>ノーマルモード<br>除去 | SIRÍZU MÓDO<br>ZYOKYO,<br>NÓMARU MÓDO<br>ZYOKYO | The ability of a system or a device to suppress the effect of a series-mode signal on its output.                                                                                                                                                                                                                                                                                                                                                                    | series mode<br>rejection,<br>normal mode<br>rejection | P2.1.1.11 |

| No.   | Term<br>(Japanese<br>character)   | Reading                                                       | Definition                                                                                                                                                                                                                                                                                                                       | English equivalent                                                | IEC No.   |
|-------|-----------------------------------|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-----------|
| 22012 | シリーズモード<br>除去率,<br>ノーマルモード<br>除去率 | SIRĪZU MÔDO<br>ZYOKYO-<br>RITU,<br>NÔMARU MÔDO<br>ZYOKYO-RITU | The ratio of the value of the series-mode signal causing a given change in the output information to that increment of the desired signal required to produce the same change in the output information.<br>Note : The series-mode rejection ratio may be expressed as a ratio or in decibels as 20 times the log of that ratio. | series mode<br>rejection ratio,<br>normal mode<br>rejection ratio | P2.1.1.12 |
| 22013 | 絶縁形アナログ<br>入力                     | ZETUEN-GATA<br>ANAROGU<br>NYŪRYOKU                            | Analogue input channel of which the terminals are electrically isolated from all other terminals.                                                                                                                                                                                                                                | isolated analogue<br>input                                        | P2.1.1.13 |
| 22014 | 非絶縁形アナロ<br>グ入力                    | HI-ZETUEN-<br>GATA<br>ANAROGU<br>NYŪRYOKU                     | Analogue input channel of which the terminals are internally electrically connected with other terminals.                                                                                                                                                                                                                        | non-isolated<br>analogue input                                    | P2.1.1.14 |
| 22015 | 負荷                                | HUKA                                                          | A part of a device connected with the output and consuming or absorbing its energy.                                                                                                                                                                                                                                              | load                                                              |           |

## 3) Measurement terms

## 3.1) General measurement terms

| No.   | Term<br>(Japanese<br>character) | Reading                           | Definition                                                                                                                                      | English equivalent | IEC No.   |
|-------|---------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|
| 23101 | 測定変量,<br>測定量                    | SOKUTEI<br>HENRYŌ,<br>SOKUTEI-RYŌ | The quantity, property, or condition which is measured.<br>Note : Commonly measured variables are temperature, pressure, flow rate, speed, etc. | measured variable  | P2.2.0.01 |
| 23102 | 測定値                             | SOKUTEI-TI                        | The value of the information obtained by a measuring device at an instant.                                                                      | measured value     | P2.2.0.02 |

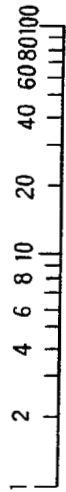
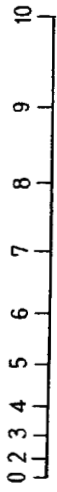
| No.   | Term<br>(Japanese<br>character) | Reading                                        | Definition                                                                                                                                                                                                                                                                                                                                                                             | English equivalent                     | IEC No.   |
|-------|---------------------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------|
| 23103 | 真の値                             | SIN NO ATAI                                    | a) Correct value of a measured variable.<br>Note: The true value of a quantity is an ideal concept and in general cannot be known. In practice, use is made of the so-called "conventional true value".<br>b) Practical value measured by a standardized instrument or device.                                                                                                         | true value                             | P2.2.0.03 |
| 23104 | 誤差                              | GOSA                                           | The algebraic difference between the measured value and the true value of the measured variable.<br>Notes 1 The error is positive when the measured value is greater than the true value.<br>Error = (measured value) - (true value)<br>2 When giving the error in the data sheet of an instrument or device, the mode of calibration of the instrument or device should be specified. | error                                  | P2.2.0.04 |
| 23105 | 系統誤差                            | KEITÔ GOSA                                     | An error produced by a cause that gives deviation to the result of a measurement.                                                                                                                                                                                                                                                                                                      | systematic error                       | P2.2.0.05 |
| 23106 | 補正                              | HOSEI                                          | The behavior or value to be added algebraically to the uncorrected result of a measurement to obtain the result near to the true value.<br>Note: This value is minus the known part of the systematic error.                                                                                                                                                                           | correction                             | P2.2.0.06 |
| 23107 | 補正基準                            | HOSEI KIZYUN                                   | A reference or reference value to be used for correction.                                                                                                                                                                                                                                                                                                                              | correction reference                   |           |
| 23108 | 基準接点補償,<br>冷接点補償                | KIZYUN SETTEN<br>HOSYÔ,<br>REISETUTEN<br>HOSYÔ | Compensation of the input from a thermocouple to minimize the error caused by the drift of ambient temperature around reference terminal.                                                                                                                                                                                                                                              | reference junction<br>compensation     |           |
| 23109 | 温度圧力補正                          | ONDO<br>ATURYOKU<br>HOSEI                      | The correction of the measured value effected by temperature or pressure deviated from the reference value.                                                                                                                                                                                                                                                                            | temperature/<br>pressure<br>correction |           |
| 23110 | 識別スレッシュ<br>ホールド                 | SIKIBETU<br>SURESSYU-<br>HÔRUDO                | The smallest change in the value of the input of a device, which causes a perceptible response in its output.                                                                                                                                                                                                                                                                          | discrimination<br>threshold            | P2.2.0.07 |

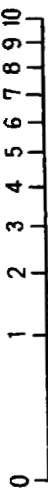
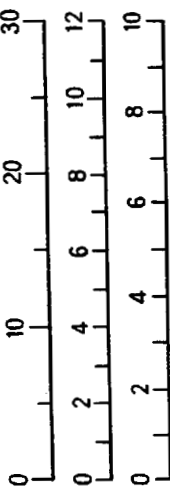
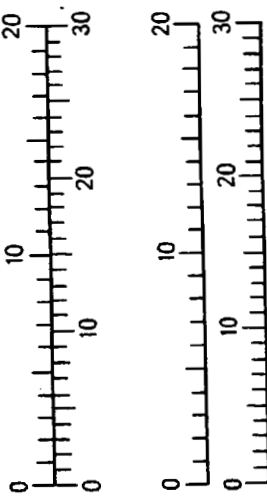
| No.   | Term<br>(Japanese<br>character) | Reading       | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | English equivalent | IEC No.   |
|-------|---------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|
| 23111 | 分解能                             | BUNKAL-NÔ     | The least interval between two adjacent discrete details, which can be distinguished one from the other.<br>Note : In the case of an instrument with digital output, the term "resolution" is often understood as the smallest change in the output (display).                                                                                                                                                                                                                                    | resolution         | P2.2.0.08 |
| 23112 | 感度                              | KANDO         | Ratio of a change in the response of a measuring instrument to the corresponding change in the stimulus.<br>Note : Sensitivity may depend on the value of the stimulus.                                                                                                                                                                                                                                                                                                                           | sensitivity        | P2.2.0.09 |
| 23113 | 測定周期                            | SOKUTEI SYŪKI | Time interval of the periodical measuring from a measurement to the next measurement at the same measuring point.                                                                                                                                                                                                                                                                                                                                                                                 | measuring period   |           |
| 23114 | トレンド記録                          | TORENDOKIROKU | A method of recording of the change in time series by selecting an arbitrary point from input points to catch mainly the operational trend of the process and displaying as a trend graph.<br>Notes 1 This term is a synonym to words "real time trend" (the function to indicate the trend how much the value is varying at the moment) and "historical trend" (the recording of the long trend).<br>2 There are two trend recordings. One is at one-fixed point and another is at multi points. | trend recording    |           |
| 23115 | バーンアウト                          | BÂN-AUTO      | Either maximizing or minimizing an output under the non-input condition.                                                                                                                                                                                                                                                                                                                                                                                                                          | burnout            |           |

### 3.2) Measuring range terms

| No.   | Term<br>(Japanese<br>character) | Reading                        | Definition                                                                                                                                                                                                                           | English equivalent | IEC No.   |
|-------|---------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|
| 23201 | 測定レンジ,<br>測定範囲                  | SOKUTEI RENZI,<br>SOKUTEI HANT | Interval defined by two values of the measured variable and within which measurements are made within the specified accuracy.<br>Note : Maximum value of the graduation on the scale is called full scale and differs from the span. | measuring range    | P2.2.1.01 |

| No.   | Term<br>(Japanese character) | Reading                                      | Definition                                                                                                                                                                                                                                                                                                                             | English equivalent                        | IEC No.   |
|-------|------------------------------|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-----------|
| 23202 | 測定レンジの<br>下限値                | SOKUTEI RENZI<br>NO ZITU-<br>KAGENTI         | The lowest value of the measured variable to which a device can be adjusted to measure within a specified accuracy.                                                                                                                                                                                                                    | measuring range<br>lower limit            | P2.2.1.02 |
| 23203 | 測定レンジの<br>上限値                | SOKUTEI RENZI<br>NO ZITU-<br>ZYÔGENTI        | The highest value of the measured variable to which a device can be adjusted to measure within a specified accuracy.                                                                                                                                                                                                                   | measuring range<br>higher limit           | P2.2.1.03 |
| 23204 | 測定レンジの<br>調整可能下限             | SOKUTEI RENZI<br>NO TYÔSEI<br>KANÔ KAGEN     | The lowest value of the measured variable to which a device is actually adjusted to measure within a specified accuracy.                                                                                                                                                                                                               | lower actual<br>measuring range<br>value  | P2.2.1.04 |
| 23205 | 測定レンジの<br>調整可能上限             | SOKUTEI RENZI<br>NO TYÔSEI<br>KANÔ<br>ZYÔGEN | The highest value of the measured variable to which a device is actually adjusted to measure within a specified accuracy.                                                                                                                                                                                                              | higher actual<br>measuring range<br>value | P2.2.1.05 |
| 23206 | オーバーレンジ                      | ÔBÂ RENZI                                    | The condition of a system or element in which the value of the input signal is outside the measuring range to which the system or element is adjusted.                                                                                                                                                                                 | over range                                | P2.2.1.06 |
| 23207 | オーバーレンジ<br>の限界               | ÔBÂ RENZI NO<br>GENKAI                       | The maximum input that can be applied to a device without causing damage or permanent change in performance.                                                                                                                                                                                                                           | over range limit                          | P2.2.1.07 |
| 23208 | ゼロ負遷移レン<br>ジ                 | ZERO HU-SENTI<br>RENZI                       | A range for which the zero value of the measured variable is less than the actual lower measuring range value.<br>Note : Zero does not appear on the scale. (See Attached Fig. 1)<br>Example : 20 to 100 kPa.                                                                                                                          | suppressed-zero<br>range                  | P2.2.1.08 |
| 23209 | ゼロサブレッ<br>ション                | ZERO<br>SAPURESSYON                          | For a suppressed-zero range, the amount that the zero of the measured variable is below the actual lower measuring range value.<br>Note : If expressed in units of the measured variable, the zero suppression is equal to the actual lower measuring range value. It may also be expressed in percentage of span (suppression ratio). | zero suppression                          | P2.2.1.09 |

| No.   | Term<br>(Japanese<br>character) | Reading                | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | English equivalent  | IEC No.   |
|-------|---------------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------|
| 23210 | ゼロ正遷移レン<br>ジ                    | ZERO SEI-SENI<br>RENZI | <p>A range for which the zero value of the measured variable is greater than the actual lower measuring range value (see Attached Fig. 1).</p> <p>Note: The zero may be between the actual lower and higher measuring range values, at the actual higher measuring range value, or above the actual higher measuring range value.</p> <p>Example: <math>-10\text{ V to }0\text{ V to }+10\text{ V};</math><br/> <math>-100\text{ }^{\circ}\text{C to }0\text{ }^{\circ}\text{C};</math><br/> <math>-100\text{ }^{\circ}\text{C to }-20\text{ }^{\circ}\text{C}.</math></p> | elevated-zero range | P2.2.1.10 |
| 23211 | ゼロイレベ-<br>ション                   | ZERO<br>EREBÊSYON      | <p>For an elevated-zero range, the amount that the zero of the measured variable is above the actual lower measuring range value (see Attached Fig. 1).</p> <p>Note: Zero elevation may be expressed either in units of the measured variable or in percentage of span.</p>                                                                                                                                                                                                                                                                                                | zero elevation      | P2.2.1.11 |
| 23212 | 対数目盛                            | TAISÛ MEMORI           | <p>A scale indicated in the logarithm.</p> <p>Example:</p>  <p style="text-align: center;"><b>Fig. 3</b></p>                                                                                                                                                                                                                                                                                                                                                                             | logarithmic scale   |           |
| 23213 | 二乗目盛                            | ZIZYÔ MEMORI           | <p>A scale indicated in the square-law.</p> <p>Example:</p>  <p style="text-align: center;"><b>Fig. 4</b></p>                                                                                                                                                                                                                                                                                                                                                                          | square-law scale    |           |

| No.   | Term<br>(Japanese<br>character) | Reading       | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | English equivalent | IEC No. |
|-------|---------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------|
| 23214 | 開平目盛                            | KAIHEI MEMORI | <p>A scale indicated in the square-root.</p> <p>Example :</p>  <p><b>Fig. 5</b></p>                                                                                                                                                                                                                                                                                                                     | square-root scale  |         |
| 23215 | 多重目盛                            | TAZYŪ MEMORI  | <p>A set of scales indicating two or more scales having different ranges.</p> <p>Example :</p>  <p><b>Fig. 6 Example of multiple scale</b></p> <p>Note : In case of a couple of scales having different ranges, it is called a "double scale".</p> <p>Example :</p>  <p><b>Fig. 7 Examples of double scales</b></p> | multiple scale     |         |

| No.   | Term<br>(Japanese<br>character) | Reading   | Definition                                                                                                                                                                     | English equivalent | IEC No. |
|-------|---------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------|
| 23216 | スケーリング                          | SUKÊRINGU | a) For a digital instrument or device, drawing of the range.<br>b) For a digital instrument or device, conversion of an input data (physical data) to an industrial unit data. | scaling            |         |

### 3.3) Response and calibration terms

| No.   | Term<br>(Japanese<br>character) | Reading                           | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                  | English equivalent                   | IEC No.   |
|-------|---------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------|
| 23301 | 特性曲線                            | TOKUSEI<br>KYOKUSEN               | A line which shows the values, in steady state, of an output variable of a system or device as a function of an input variable, the other input variables being maintained at specified constant values.<br>Note : When the other input variables are treated as parameters, a set of characteristic curves is obtained.                                                                                                                                    | characteristic curve                 | P2.2.2.01 |
| 23302 | 規定特性曲線                          | KITEI TOKUSEI<br>KYOKUSEN         | A line which shows the values, in steady state, of an output variable which a system or device should give as a function of a corresponding input variable, under defined conditions (see Attached Fig. 4).                                                                                                                                                                                                                                                 | specified<br>characteristic<br>curve | P2.2.2.02 |
| 23303 | 正確さ                             | SEIKAKU-SA                        | The closeness of agreement between the result of a measurement and the (conventional) true value of the quantity being measured.                                                                                                                                                                                                                                                                                                                            | accuracy                             | P2.2.2.03 |
| 23204 | 組合せ精度,<br>総合精度                  | KUMIAWASE<br>SEIDO,<br>SÔGÔ SEIDO | The limits of inaccuracy consequently obtained by the operation of combined several devices.                                                                                                                                                                                                                                                                                                                                                                | system accuracy                      |           |
| 23305 | 最大誤差                            | SAIDAI GOSA                       | The maximum positive and negative deviations from the specified characteristic curve observed in testing a device under specified conditions and by a specified procedure (see Attached Fig. 4).<br>Notes 1 It is typically expressed in terms of the measured variable, percentage of span, percentage of upper range value, percentage of scale length or percentage of actual output reading. The particular method of presentation should be specified. | inaccuracy                           | P2.2.2.04 |

| No.   | Term<br>(Japanese<br>character) | Reading                  | Definition                                                                                                                                                                                                                                                                                                                                                                                              | English equivalent          | IEC No.   |
|-------|---------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------|
|       |                                 |                          | 2 The term inaccuracy is sometimes referred to as measured accuracy. This term should not be used.                                                                                                                                                                                                                                                                                                      |                             |           |
| 23306 | 精度定格                            | SEIDO TEIKAKU            | The limits within which the inaccuracy of a given model of a device can be guaranteed in its specification (see Attached Fig. 4).<br>Note: Accuracy rating includes the combined effects of conformity, hysteresis, dead band, repeatability errors and other details pertinent to the specification of the device.                                                                                     | accuracy rating             | P2.2.2.05 |
| 23307 | 校正                              | KŌSEI                    | The set of operations that establish relationship under specified conditions between the quantities measured and the corresponding values of the output of the device.<br>Note: In practice, calibration includes operations such as:<br>a) Determining the locations at which scale graduations are to be placed.<br>b) Ascertaining the error by comparing the device output reading with a standard. | calibration                 | P2.2.2.06 |
| 23308 | 校正曲線                            | KŌSEI KYOKUSEN           | A representation of the relationship between the values of the quantity measured and the corresponding values actually given by the device, under defined conditions (see Attached Fig. 4).                                                                                                                                                                                                             | calibration curve           | P2.2.2.07 |
| 23309 | 校正サイクル                          | KŌSEI SAIKURU            | The combination of two calibration curves, one obtained by ascending values of the measured values, the other by descending values of the measured values, within the limits of the calibrated range of the device (see Attached Fig. 4).                                                                                                                                                               | calibration cycle           | P2.2.2.08 |
| 23310 | 校正表                             | KŌSEIHYŌ                 | The tabular form of a calibration curve (see Attached Fig. 5).                                                                                                                                                                                                                                                                                                                                          | calibration table           | P2.2.2.09 |
| 23311 | 校正のトレーサ<br>ビリティ                 | KŌSEI NO<br>TORĒSABIRITI | The ability to relate the known value used in calibrating a device to an actual value that conforms with the officially recognized and accepted value of that quantity.<br>Note: This is usually carried out by a step-by-step method using an instrument or a group of instruments calibrated and certified by a national standards laboratory.                                                        | calibration<br>traceability | P2.2.2.10 |

| No.   | Term<br>(Japanese<br>character) | Reading             | Definition                                                                                                                                                                                                                                                                        | English equivalent        | IEC No.   |
|-------|---------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------|
| 23312 | 調整                              | TYÔSEI              | The operation of bringing the output of a device or instrument to comply as closely as possible with the desired specified characteristic curve.                                                                                                                                  | adjustment                | P2.2.2.11 |
| 23313 | 一致性                             | ITTISEI             | The closeness of a calibration curve to approximate to a specified characteristic curve (which can be linear, logarithmic, parabolic, etc.).<br>Note: The term "conformity" should be qualified. When expressed simply as conformity, it is assumed to be independent conformity. | conformity                | P2.2.2.12 |
| 23314 | 独立一致性                           | DOKURITU<br>ITTISEI | The closeness of a calibration curve of a device which can be adjusted to approximate to the specified characteristic curve so that the maximum deviation is minimized.                                                                                                           | independent<br>conformity | P2.2.2.13 |

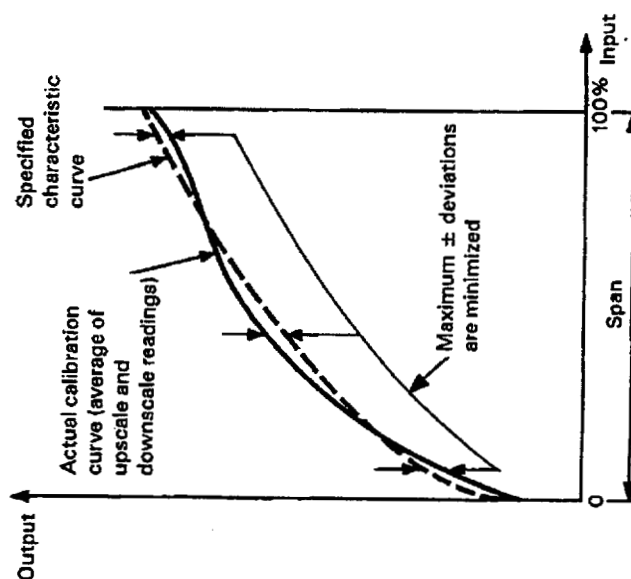


Fig. 8 Independent conformity

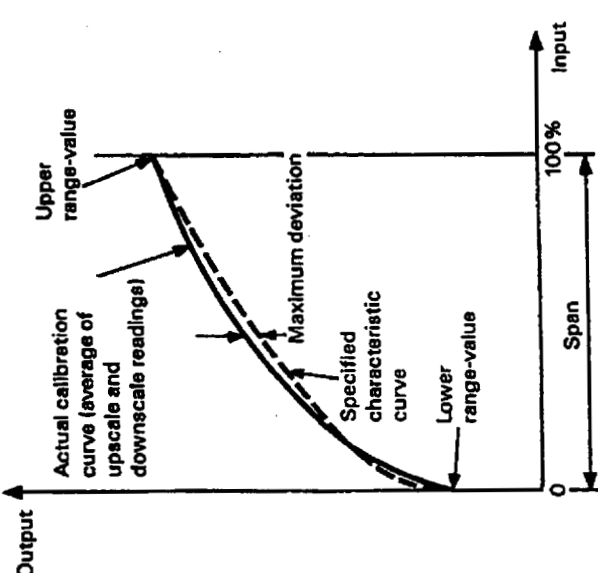
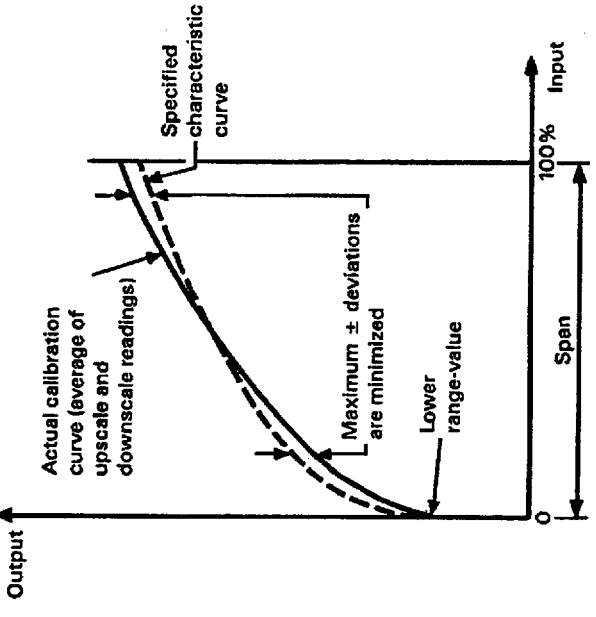
| No.   | Term<br>(Japanese character) | Reading                     | Definition                                                                                                                                                                                                                                                                                                | English equivalent        | IEC No.   |
|-------|------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------|
| 23315 | 両端基準一緻性                      | RYÔTAN<br>KIZYUN<br>ITTISEI | <p>The closeness of a calibration curve of a device which can be adjusted to approximate to the specified characteristic curve so that the upper and lower range values of both input and output curves coincide.</p>  | terminal-based conformity | P2.2.2.14 |

Fig. 9 Terminal-based conformity

| No.   | Term<br>(Japanese<br>character) | Reading                | Definition                                                                                                                                                                                                                                                                                                                                                                                                      | English equivalent       | IEC No.   |
|-------|---------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------|
| 23316 | ゼロ基準一致性                         | ZERO KIZYUN<br>ITTISEI | <p>The closeness of a calibration curve of a device which can be adjusted to approximate to the specified characteristic curve so that the maximum positive and negative deviation are equal and the lower range value of both curves coincide.</p>  <p style="text-align: center;"><b>Fig. 10 Zero-based conformity</b></p> | zero-based<br>conformity | P2.2.2.15 |
| 23317 | 一致性誤差                           | ITTISEI GOSA           | <p>The absolute value of maximum deviation between the calibration curve and the specified characteristic curve.</p> <p>Notes 1 This error is usually expressed as a percentage of the span.<br/>2 The term "conformity error" should be qualified. When expressed simply as conformity error, it is assumed to be independent conformity error.</p>                                                            | conformity error         | P2.2.2.16 |

| No.   | Term<br>(Japanese<br>character) | Reading                 | Definition                                                                                                                                                                                                                           | English equivalent       | IEC No.   |
|-------|---------------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------|
| 23318 | 直線性                             | TYOKUSENSEI             | <p>The closeness with which a calibration curve approximates to a specified straight line.</p> <p>Note: The term "linearity" should be qualified. When expressed simply as linearity, it is assumed to be independent linearity.</p> | linearity                | P2.2.2.17 |
| 23319 | 独立直線性                           | DOKURITU<br>TYOKUSENSEI | <p>The closeness of a calibration curve of a device which can be adjusted to approximate to the specified straight line so that the maximum deviation is minimized.</p>                                                              | independent<br>linearity | P2.2.2.18 |

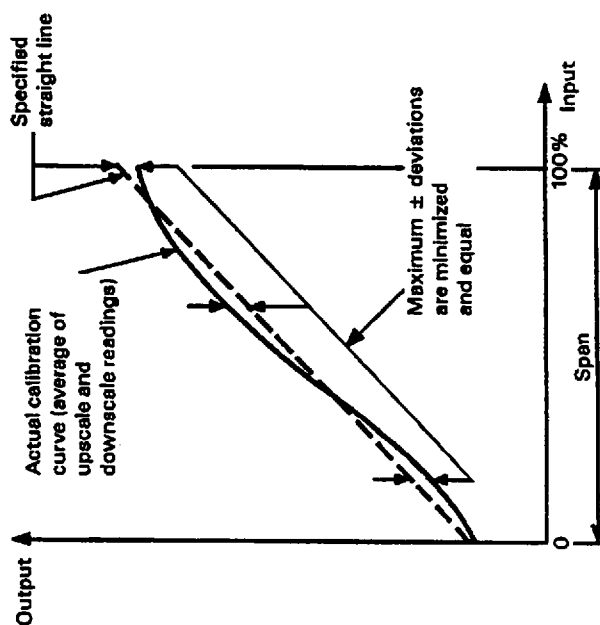
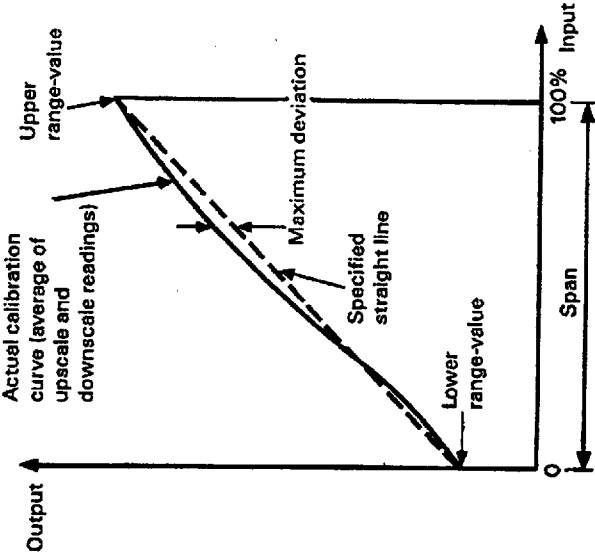
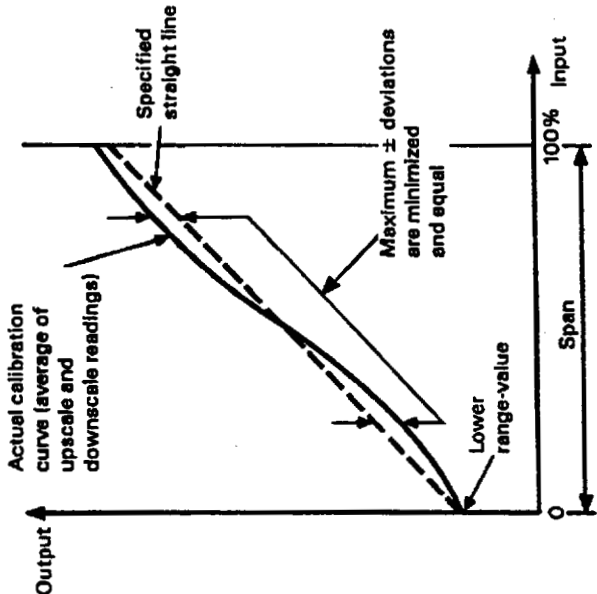


Fig. 11 Independent linearity

| No.   | Term<br>(Japanese<br>character) | Reading                         | Definition                                                                                                                                                                                                                                                                                                                                | English equivalent          | IEC No.   |
|-------|---------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------|
| 23320 | 両端基準直線性                         | RYÔTAN<br>KIZYUN<br>TYOKUSENSEI | <p>The closeness of a calibration curve of a device which can be adjusted to approximate to the specified straight line so that the upper and lower range value of both input and output curves coincide.</p>  <p>Fig. 12 Terminal-based linearity</p> | terminal-based<br>linearity | P2.2.2.19 |

| No.   | Term<br>(Japanese character) | Reading                    | Definition                                                                                                                                                                                                                                                                                                                                                           | English equivalent   | IEC No.   |
|-------|------------------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------|
| 23321 | ゼロ基準直線性                      | ZERO KIZYUN<br>TYOKUSENSEI | <p>The closeness of a calibration curve of a device which can be adjusted to approximate to the specified straight line so that the maximum positive and negative deviation are equal and the lower range value of both curves coincide.</p>  <p>Fig. 13 Zero-based linearity</p> | zero-based linearity | P2.2.2.20 |
| 23322 | 直線性誤差                        | TYOKUSENSEI<br>GOSA        | <p>The absolute value of maximum deviation between the calibration curve and the specified straight line.</p> <p>Note : The term "linearity error" should be qualified. When expressed simply as linearity error, it is assumed to be independent linearity error.</p>                                                                                               | linearity error      | P2.2.2.21 |

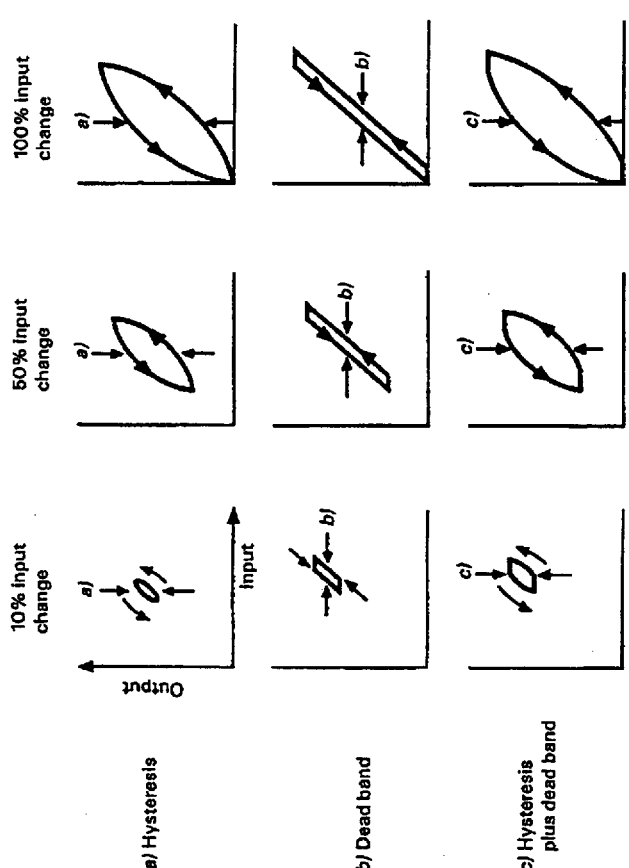
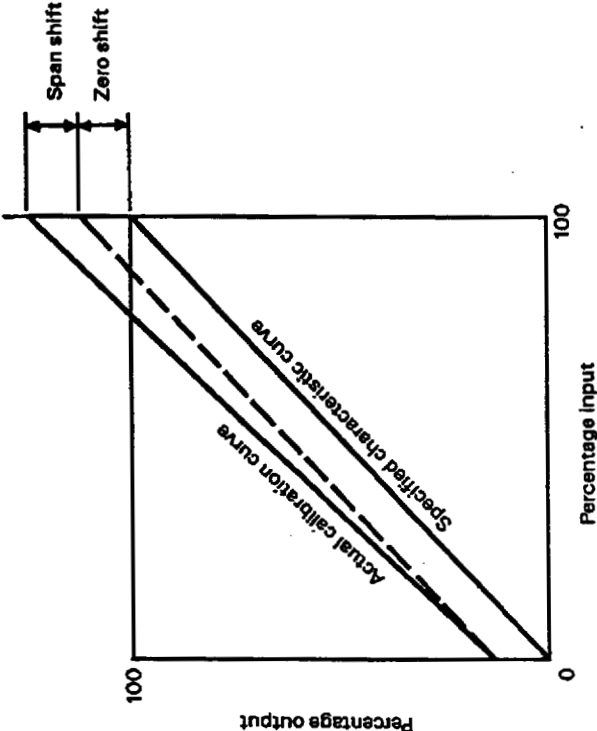
| No.   | Term<br>(Japanese<br>character) | Reading                           | Definition                                                                                                                                                                                                          | English equivalent | IEC No.   |
|-------|---------------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|
| 23323 | ヒステリシス                          | HISUTERISISU                      | The property of a device or instrument whereby it gives different output values in relation to its input values depending on the directional sequence in which the input values have been applied.                  | hysteresis         | P2.2.2.22 |
|       | a) ヒステリシス                       | HISUTERISISU                      |  <p>a) Hysteresis</p> <p>b) Dead band</p> <p>c) Hysteresis plus dead band</p>                                                    |                    |           |
|       | b) 不感帯                          | HUKANTAI                          |                                                                                                                                                                                                                     |                    |           |
|       | c) ヒステリシス<br>及び不感帯              | HISUTERISISU<br>OYOBI<br>HUKANTAI |                                                                                                                                                                                                                     |                    |           |
| 23324 | ヒステリシス差                         | HISUTERISISU-<br>SA               | The maximum deviation between the two calibration curves of the measured variable as obtained by an upscale going traverse and a downscale traverse over the full range and subtracting the value of the dead band. | hysteresis error   | P2.2.2.23 |

Fig. 14 Hysteresis and dead band

| No.   | Term<br>(Japanese<br>character) | Reading              | Definition                                                                                                                                                                                                                                                                                                                                                                                                                             | English equivalent  | IEC No.   |
|-------|---------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------|
| 23325 | 不感帯                             | HUKANTAI             | Finite range of values within which variation of the input variable does not produce any noticeable change in the output variable (see Fig. 14).<br>Notes 1 If this type of characteristic is intentionally used, it is sometimes called a "neutral zone".<br>2 For a device with digital output representation, the dead band is the smallest change in the analogue input signal which always causes a change in the digital output. | dead band           | P2.2.2.24 |
| 23326 | 不感帯誤差                           | HUKANTAI<br>GOSA     | The maximum value of the span of the dead band over the measuring range.                                                                                                                                                                                                                                                                                                                                                               | dead band error     | P2.2.2.25 |
| 23327 | 分解能係数                           | BUNKAINÔ<br>KEISÛ    | The ratio in percentage of the maximum dead band to the measuring span.                                                                                                                                                                                                                                                                                                                                                                | resolution factor   | P2.2.2.26 |
| 23328 | ドリフト                            | DORIHUTO             | An undesired gradual change in the input-output relationship of a device over a period of time, not caused by external influences on the device.                                                                                                                                                                                                                                                                                       | drift               | P2.2.2.27 |
| 23329 | 点ドリフト                           | TEN-DORIHUTO         | The change of output to a constant input over a specified period of time under specified reference-operating conditions.<br>Note: Point drift is frequently determined at two or more input, as for example; at 0 %, 50 % and 100 % of range. Thus, any drift of zero or span may be calculated.<br>Example: The mid-scale drift at ambient temperature ( $20 \pm 1$ °C) over a period of 48 h was within 0.1 % of output span.        | point drift         | P2.2.2.28 |
| 23330 | 繰返し性誤差                          | KURIKAESISEI<br>GOSA | The algebraic difference between the extreme values obtained by a number of consecutive measurements of the output over a short period of time for the same value of the input under the same operating conditions, approaching from the same direction, for full range traverses (see Attached Fig. 5).<br>Note: It is usually expressed in percentage of span and does not include hysteresis or drift.                              | repeatability error | P2.2.2.29 |

| No.   | Term<br>(Japanese<br>character) | Reading           | Definition                                                                                                                                                                                                                                                                                                                                                                                                                     | English equivalent       | IEC No.   |
|-------|---------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------|
| 23331 | 再現性誤差                           | SAIGENSEI<br>GOSA | The algebraic difference between the extreme values obtained by a number of repeated measurements of the output for the same value of input made under the same operating conditions over a period of time, as approached from both directions.<br>Note : It is usually expressed in percentage of span and does not include hysteresis, repeatability, dead band, and eventually drift, if the period of time is long enough. | reproducibility<br>error | P2.2.2.30 |
| 23332 | 環境誤差                            | KAKYÔ GOSA        | The maximum change of the inaccuracy due to the influence of the change of one parameter (temperature, power supply, etc.) of the environmental conditions while other parameters of the environmental conditions are maintained at the reference values.<br>Note : For example:<br>Temperature error in $^{\circ}\text{C}$ ;<br>Supply voltage error in $\%/V$ ;<br>Supply frequency error in $\%/Hz$ .                       | environmental<br>error   | P2.2.2.31 |
| 23333 | スパン誤差                           | SUPAN GOSA        | The difference between the actual output span and the specified output span.<br>Note : It is usually expressed as a percentage of the specified output span.                                                                                                                                                                                                                                                                   | span error               | P2.2.2.32 |

| No.   | Term<br>(Japanese<br>character) | Reading      | Definition                                                                                                                                                                                                                                                                                                           | English equivalent | IEC No.   |
|-------|---------------------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|
| 23334 | スパンシフト                          | SUPAN SIHUTO | <p>The change in output span due to some influences.<br/>           Note : It is usually expressed as a percentage of the specified output span.</p>  <p style="text-align: center;"><b>Fig. 15 Span shift and zero shift</b></p> | span shift         | P2.2.2.33 |
| 23335 | ゼロ点誤差                           | ZEROTEN GOSA | <p>The difference, under specified conditions of use, between the actual output value and the specified minimum value of the output range when the input is at the lower range value.<br/>           Note : It is usually expressed as a percentage of the specified output span.</p>                                | zero error         | P2.2.2.34 |
| 23336 | ゼロシフト                           | ZERO SIHUTO  | <p>The change of the output value, due to some influence, when the input variable is at the lower range value (see Fig. 15).<br/>           Note : It is usually expressed as a percentage of the specified output span.</p>                                                                                         | zero shift         | P2.2.2.35 |

## 4) Control terms

## 4.1) General control terms

| No.   | Term<br>(Japanese character) | Reading                     | Definition                                                                                                                                                                                                                                                 | English equivalent | IEC No.   |
|-------|------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|
| 24101 | 自動制御                         | ZIDÔ SEIGYO                 | Control carried out automatically by a control system consisted.                                                                                                                                                                                           | automatic control  | P2.3.0.01 |
| 24102 | 手動制御                         | SYUDÔ SEIGYO                | Control in which a direct or indirect human manipulation of the final controlling element is carried out.<br>Note: In the process industry, this is generally done via a standardized signal.                                                              | manual control     | P2.3.0.02 |
| 24103 | 監視                           | KANSI                       | Observation of the operation of a system or part of a system to verify correct functioning and detect incorrect functioning, this being done by measuring one or more variables of the system and comparing the measured values with the specified values. | monitoring         | P2.3.0.03 |
| 24104 | 統括管理,<br>スーパービジョ<br>ン        | TÔKATU KANRI,<br>SÛPÂBIZYON | The control and monitoring operations of a system including, where appropriate, those operations which ensure reliability and safeguarding.                                                                                                                | supervision        | P2.3.0.04 |
| 24105 | 銘柄管理                         | MEIGARA<br>KANRI            | A method of management with data base on kinds of materials, those ratio, production conditions and its sequence for each product to be manufactured.                                                                                                      | recipe management  |           |
| 24106 | 制御の階層                        | SEIGYO NO<br>KAISÔ          | Schematic presentation of the relationships between different levels of control (automation) ordered in accordance with increasing degree of controlling system complexity.                                                                                | control hierarchy  | P2.3.0.05 |
| 24107 | 制御アルゴリズム                     | SEIGYO<br>ARUGORIZUMU       | A mathematical representation of the control action to be performed.                                                                                                                                                                                       | control algorithm  | P2.3.0.06 |
| 24108 | 制御周期                         | SEIGYO SYÛKI                | A period to perform the arithmetic and control actions to the system or subsystem objected by the control unit.                                                                                                                                            | control period     |           |
| 24109 | 評価指標                         | HYÔKA SIHYÔ                 | Mathematical expression to characterize the quality of control under specified conditions.                                                                                                                                                                 | performance index  | P2.3.0.07 |

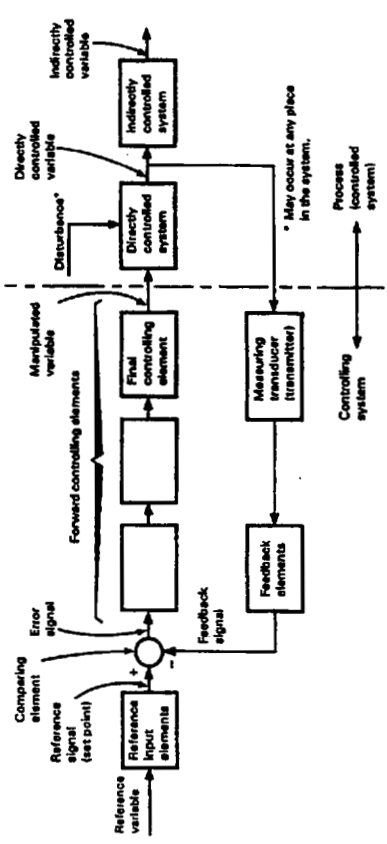
| No.   | Term<br>(Japanese character) | Reading                                    | Definition                                                                                                                                                                                                                                                                                                                 | English equivalent                       | IEC No.   |
|-------|------------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------|
| 24110 | 開ループ制御                       | KAI-RŪPU<br>SEIGYO                         | Control in which the output variable does not permanently influence the effect of the control on itself.<br>Note: In addition to analogue open-loop control, there are other types such as binary logic and sequential control.                                                                                            | open-loop control                        | P2.3.0.08 |
| 24111 | 閉ループ制御,<br>フィードバック<br>制御     | HEI-RŪPU<br>SEIGYO,<br>FĪDOBAKKU<br>SEIGYO | Control in which the control action is made to depend persistently on the measurement of the controlled variable.<br>                                                                                                                    | closed-loop control,<br>feedback control | P2.3.0.09 |
| 24112 | 定値制御                         | TEITI SEIGYO                               | Feedback control by which the controlled variable is made to remain substantially constant.                                                                                                                                                                                                                                | control with fixed set-point             | P2.3.0.10 |
| 24113 | 追従制御,<br>追値制御                | TUIZŪ SEIGYO,<br>TUITI SEIGYO              | Feedback control by which the controlled variable is made to vary according to the variations of a reference variable.                                                                                                                                                                                                     | follow-up control                        | P2.3.0.11 |
| 24114 | フィードフォ<br>ワード制御              | FĪDO-FOWĀDO<br>SEIGYO                      | Control in which the information about a desired value, disturbance, etc. determines the manipulated variable.<br>Notes 1 This additional control action is taken in such a way as to minimize the deviation of the controlled variable from a desired value, and is applicable to open-loop control and feedback control. | feedforward control                      | P2.3.0.12 |

Fig. 16 Feedback control

| No. | Term<br>(Japanese character) | Reading | Definition                                                                                                                                                                                                                                                                                                                                                                                                                           | English equivalent | IEC No. |
|-----|------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------|
|     |                              |         | <p>2 The use of feedforward control does not change system stability because it is not part of the feedback loop which determines the stability characteristics.</p> <div data-bbox="387 741 727 1469"> </div> <p style="text-align: center;"><b>Fig. 17 Feedforward control without feedback</b></p> <div data-bbox="834 741 1294 1542"> </div> <p style="text-align: center;"><b>Fig. 18 Feedforward control with feedback</b></p> |                    |         |

| No.   | Term<br>(Japanese<br>character) | Reading             | Definition                                                                                                                                                                                         | English equivalent         | IEC No.   |
|-------|---------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------|
| 24115 | カスケード制御                         | KASUKÊDO<br>SEIGYO  | Control in which the output variable of a controller is the reference variable of another controller(s).                                                                                           | cascade control            | P2.3.0.13 |
| 24116 | 多変数制御                           | TAHENSÛ<br>SEIGYO   | A multi-input multi-output control in which a total control of those input at the same time controls the multiple controlled variables.                                                            | multivariable<br>control   |           |
| 24117 | 非干渉制御                           | HI-KANSYÔ<br>SEIGYO | A multi-input multi-output control in which any given input-output pair is operating independently of any other input-output pair.<br>Note: This does not preclude interaction within the process. | non-interacting<br>control | P2.3.0.14 |
| 24118 | 位置制御動作                          | ITI SEIGYO<br>DÔSA  | Type of action in which only a finite number of values, called "steps", can be imposed on the output variable.                                                                                     | step control action        | P2.3.0.15 |

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| No.   | Term<br>(Japanese<br>character) | Reading                                                   | Definition                                                                                                                                                                                                                                                                                                                                                                      | English equivalent                                        | IEC No.   |
|-------|---------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------|
| 24119 | スプリットレンジ,<br>信号振幅シーケ<br>ンス制御    | SUPURITTO<br>RENZI,<br>SINGÔ SINPUKU<br>SIKENSU<br>SEIGYO | <p>Action in which two or more output signals are generated according to different functions by one input signal.</p> <p>Note: A special type of split-ranging is the so-called signal amplitude sequencing, where the output signals are responding consecutively with or without overlap to the magnitude of the input signal.</p> <div data-bbox="478 861 1212 1474"> </div> | split-range,<br>signal amplitude<br>sequencing<br>control | P2.3.0.16 |

Fig. 19 Signal amplitude sequencing control