

JIS

JAPANESE INDUSTRIAL STANDARD

Vibration level meters

JIS C 1510—1995

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by

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In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

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Vibration level meters

C 1510-1995

1. Scope This Japanese Industrial Standard specifies vibration level meters to be used for the assessment of whole-body vibration of human beings in vibrational environment (pollution, working environment, etc.).
2. Definitions For the purpose of this Standard, the following definitions apply:
 - (1) vibration acceleration level This is 20 times the common logarithm of the quotient of r.m.s. value of vibration acceleration divided by reference vibration acceleration (10^{-5} m/s²). The unit is decibel. The unit symbol is dB.
 - (2) vibration level This is 20 times the common logarithm of the quotient of r.m.s. value of vibration acceleration weighted by the vertical characteristic or horizontal characteristic given in Attached Table 1 divided by reference vibration acceleration (10^{-5} m/s²). The unit is decibel. The unit symbol is dB.
 - (3) vertical characteristic The frequency characteristic which is prepared based on the vibration sensitive characteristic of whole body to vertical vibration and given in Attached Table 1.
 - (4) horizontal characteristic The frequency characteristic which is prepared based on the vibration sensitive characteristic of whole body to horizontal vibration and given in Attached Table 1.
 - (5) sensitive axis A sensitive axis denotes the direction in which the vibration pickup shows the maximum sensitivity.
 - (6) transverse sensitivity A transverse sensitivity indicates the sensitivity of the vibration pickup in an arbitrary direction rectangular to the sensitive axis.
 - (7) reference vibration acceleration level The vibration acceleration level which is used as the reference for test.
 - (8) reference range The range for test including the reference vibration acceleration level.
 - (9) instrumental error The difference between the reference response to each frequency shown in Attached Table 1 and the actual response in the vertical characteristic at corresponding frequency of an instrument.
 - (10) effective scale The scale or indication in an indicating mechanism at which this Standard is satisfied.
 - (11) time constant The time constant of a circuit which has exponential mean characteristics.

- (12) burst signal An intermittent signal of sinusoidal wave consisting of an integer waves in which the amplitude of wave form starts and ends at zero. There are such cases that the signal repeats with rest time equal to integer times of the sine wave period or the signal is only one.
- (13) crest factor The ratio of the maximum instantaneous value to the r.m.s. value in a signal.

3. Ratings

3.1 Working frequency range The working frequency range shall be 1 Hz to 80 Hz.

3.2 Working temperature range The working temperature range shall be -10°C to $+50^{\circ}\text{C}$.

If the difference of the instrumental error at the working temperature range and that under the reference conditions specified in 6.1.2 exceeds 0.5 dB, the correction values for the instrumental error shall be stated in the instruction manual.

3.3 Working humidity range The working humidity range shall not exceed 90% in relative humidity.

The instrumental error at relative humidity 30% to 90% shall not exceed that under the reference conditions specified in 6.1.2 by 0.5 dB.

4. Performances

4.1 Instrumental error The instrumental error shall not exceed 1 dB for the reference acceleration level under the standard conditions specified in 6.1.1 over the measuring range of vibration level.

4.2 Vibration characteristic

4.2.1 Response in sensitive axis The response in sensitive axis for the vertical characteristic and horizontal characteristic shall be the reference responses shown in Attached Table 1, and the deviations shall be within the respective tolerances given in the same table (see Attached Fig. 1). The response in sensitive axis for the flat characteristic shall be the reference responses shown in Attached Table 1 and the deviations shall be within the respective tolerances given in the same table.

As for the frequency response outside the frequency range shown in Attached Table 1, Attached Fig. 1 and Attached Fig. 2 (less than 1 Hz and more than 80 Hz), it is desired that it has a cut off characteristic of 12 dB/octave or more.

4.2.2 Transverse sensitivity of vibration pickup The difference between the response to the vibration in the sensitive axis and the response to the vibration in a direction 90° from the sensitive axis shall be not less than 15 dB over the specified overall frequency range.