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Indian Standard

RECOMMENDATIONS FOR MODULAR CO-ORDINATION: BASIC MODULE AND SUB-MODULAR INCREMENTS

(First Revision)

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Indian Standard

RECOMMENDATIONS FOR MODULAR CO-ORDINATION: BASIC MODULE AND SUB-MODULAR INCREMENTS

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 30 July 1986, after the draft finalized by the Modular Co-ordination Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 The word 'module' comes from the Latin word 'modulus; meaning a small dimension. The module forms the basis of a three-dimensional rectilinear frame which, when used in buildings, ensures that standard materials and components can be used together and they will, in turn, fit into the general design layout. It is obvious, that in actual application, the manufacturers of materials and components will not normally supply articles to dimensions exactly equivalent to a module, or to a multiple or a sub-multiple thereof, but to dimensions which when the articles are installed, will permit a building, as a whole to conform to a modular layout

0.2.1 Modular co-ordination has achieved a great importance in the recent years. The reduction of building costs through modernization of building methods and production of pre-fabricated components in factories has received very large attention in all parts of the world. The rationalization of building industry has proceeded on the principle of establishing a simple dimensional relationship by means of a basic unit (module) which governs the dimensions of building materials, components and of the building itself as a whole.

0.3 This standard was first published in 1982 covering the basic module. In this revision the definition and recommended values for sub-modular increments have been included along with the guidelines for application of sub-modular increments.

0.4 Due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in additon to relating it to the practices in the field in India. The contents of this standard are equivalent to those given in the following standards published by the International Organization for Standardization (ISO).

ISO 1006-1973 Modular co-ordination — Basic module.

ISO 6514-1982 Building construction — Modular co-ordination — Sub-Modular increments.

1. SCOPE

1.1 This standard covers the definitions and symbol of basic module and sub-modular increments for modular co-ordination of building, for their constituent parts and for the building components used in their constituent parts and for the building components used in their construction, and also recommends their values.

2. DEFINITIONS AND SYMBOLS

2.1 Basic Module — The unit (of length) of modular co-ordination, the size of which is selected in order to achieve dimensional co-ordination of building elements and of general purpose building components with maximum flexibility and convenience, and shall be denoted by letter 'M'.

2.2 Sub-Modular Increment — An increment of size, the value of which is a selected fraction of the basic module.

3. RECOMMENDED VALUES

3.1 Basic Module (*see* **Fig. 1**) — The value of the basic module shall be:

$$1\ M = 100\ mm$$

3.2 Sub-Modular Increments (*see* **Fig. 1**) — The value for sub-modular increment shall be:

$$\frac{M}{2} = 50\ mm$$

NOTE — This is the international standardized value.

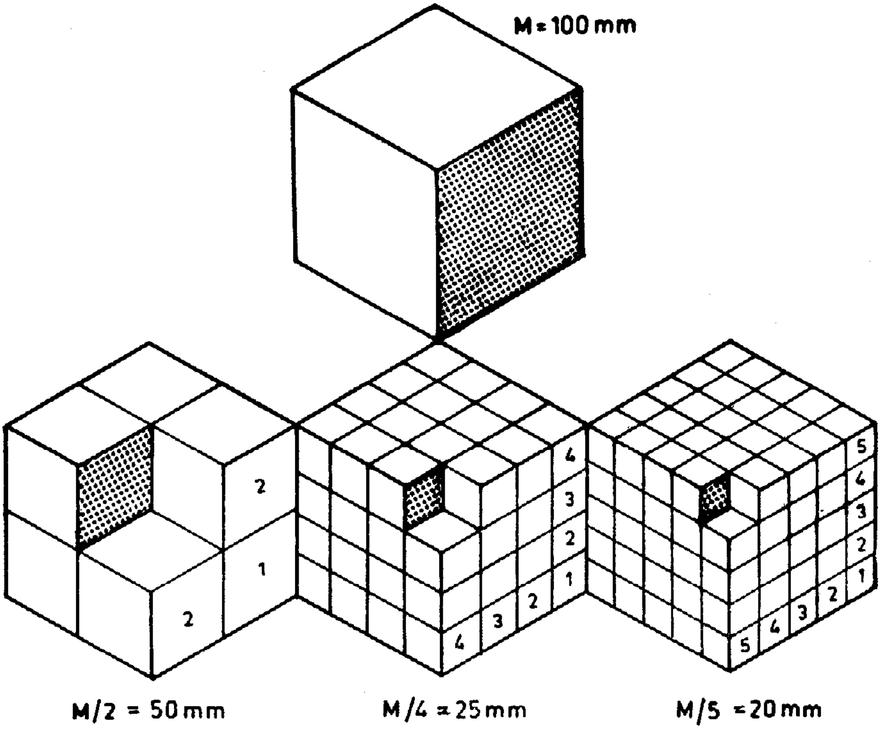

FIG. 1 BASIC MODULE AND SUB MODULES

3.2.1 In those cases where a smaller sub-modular increment is needed, the following should be adopted:

$$\frac{M}{4} = 25 \text{ mm, or}$$

$$\frac{M}{5} = 20 \text{ mm}$$

3.3 It may be noted that in accordance with the principles of modular co-ordination the work sizes always differ from the co-ordinating sizes of building components to allow for the joints and tolerances.

4. APPLICATION

4.1 Basic Module

4.1.1 The basic module shall be used as the basis of measurement of all types of buildings planned, designed and constructed according to the principles of modular co-ordination.

4.2 Sub-Modular Increments

4.2.1 Sub-modular increments shall be used where there is a need for an increment smaller than the basic module.

4.2.2 Sub-modular increments shall not be used for determining the distance between modular reference planes of a modular grid.

4.2.3 Sub-modular increments may be used for determining the displacement of different modular grids in order to produce a solution appropriate to the project as a whole.

4.2.4 Sub-modular increments may be used for:

a) determining the co-ordinating sizes of building products and components smaller than 1 M (for example: certain types of ceramic tiles and nominal drops in floors); and

b) determining the co-ordinating sizes of building components and products larger than 1 M which need to be sized in increments smaller than 1 M (for example bricks, tiles, thickness of walls, floors and sub-floors, and the sizing and location of pipes, etc).

4.2.5 Only one of the sub-modular increment values shall be used for planning, designing and construction in a project.

4.2.6 The preferred values with sub-modular increments shall be as shown in Table 1.

TABLE 1 PREFERRED VALUES WITH SUB-MODULAR INCREMENTS

BASIC MODULE (M)	SUB-MODULAR INCREMENTS			VALUES mm	
	1st PREFERENCE (M/2)	2nd PREFERENCE (M/4)	3rd PREFERENCE (M/5)		
			●	20	
		●			25
			●	40	
	●				50
			●	60	
		●			75
			●	80	
●					100
			●	120	
		●			125
			●	140	
	●				150
			●	160	
		●			175
			●	180	
●					200
			●	220	
		●			225
			●	240	
	● L				250
			●	260	
		● L			275
			● L	280	
●					300

Note : L Stands for Limit.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	Unit	Symbol	Definition
Force	newton	N	1 N = 1 kg.m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2