IS 11954 (1987): Guide for colour coding of electrical mimic diagrams [ETD 1: Basic Electrotechnical Standards]

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Indian Standard

GUIDE FOR COLOUR CODING OF ELECTRICAL MIMIC DIAGRAMS

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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Indian Standard

GUIDE FOR COLOUR CODING OF ELECTRICAL MIMIC DIAGRAMS

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0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 27 March 1987, after the draft finalized by the Basic Electrotechnical Standard Sectional Committee had been approved by the Electrotechnical Division Council.

0.2 It is a recognized practice the world over to indicate on the control panels by means of single-line diagram, the disposition of the various electrical circuits that is involved. A single control panel is required to accommodate more than one voltage level and may, at many times, accommodate more than three voltage levels depending upon the control station layout.

0.3 The single-line diagram also known as 'mimic diagram' on the panel, employs use of different colours to denote the different voltage levels. Together with other circuit symbols as may be necessary, the mimic diagram denotes the mode of interconnections of the various components of the panel and the services they control.

0.4 This standard is primarily being brought out to cover standard colour coding practices for mimic diagram purposes so that it would form a common basis in trade, and restrict the variety of contrasting colours being employed. The purpose of this exercise is primarily to specify colours for codifying voltages that are standard and are required to be represented on the same diagram rather than cover the entire gamut of voltages likely to appear.

0.5 In preparing this standard, a comprehensive study of existing practice and colour shades used in mimic diagrams were made. Even though the shades given in this standard signify a major departure from existing practice, it is highly recommended in the interest of standardization. It is envisaged that in due course, all involved would be familiar with the specified shades and their meaning in respect of the voltage levels they represent.

0.6 The voltage levels covered by this standard are those considered as standard in IS : 565-1962*. Colours recommended for codification of

*Voltages and frequency for transmission and distribution systems (*revised*).

voltages are standard shades recognized and designated according to IS : 5-1978*. In choosing the shades *vis-a-vis* the voltage level, it had been found appropriate to choose colours closer to 'Red' for higher voltages and those closer to 'Violet' for lower voltages.

0.7 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the colour scheme for codification of voltages in mimic diagrams for power systems.

2. METHOD OF COLOURING

2.1 The mimic diagrams may be of directly painted type or strip mimic type, in the latter case the strips are coloured to indicate voltages.

3. IDENTIFICATION OF COLOURS

3.1 For identifying the colours corresponding to the shade numbers given in Table 1, reference shall be made to IS : 5-1978*.

4. BACKGROUND COLOUR

4.1 The background colour on the panel for depicting the mimic diagrams shall preferably be light grey or cream. If other colours are chosen, they shall be such as to render good contrast with the shades representing the voltage levels.

5. COLOUR SCHEME

5.1 When it is desired to indicate system voltages by colours on any layout or mimic diagram, the colouring shall be in accordance with Table 1.

*Colours for ready mixed paints and enamels (*third revision*).

†Rules for rounding off numerical values (*revised*).

TABLE 1 COLOUR SCHEME FOR MIMIC DIAGRAM

(*Clauses* 3.1 *and* 5.1)

	Voltage Level	Description of Recommended Colour	Shade No. of Colour as per IS : 5-1978*
	(1)	(2)	(3)
ac	kV HVDC	Crimson	540
	400	Signal red	537
	220	Light orange	557
	132 / 110	Lemon	355
	66	Golden brown	414
	33 / 22	Olive green	220
	11	Sea green	217
	6·6	Aircraft blue	108
	3·3	Sky blue	101
	415 V / 240 V	Dark violet	796
dc	220 / 110	Black	—

Note 1 — Voltage levels indicated in brackets between themselves are considered not likely to appear in the same mimic diagram and different shades are recommended to distinguish them. These voltages shall therefore be represented by the same colour.

Note 2 — Additional voltages not covered in the table, where necessary, shall be indicated by a colour so chosen that is distinguishable from the other colours appearing in the same mimic diagram.

Note 3 — Where considered desirable by the user, the actual voltage values may be indicated in numerals along with the colour shades, in a convenient location on the mimic diagram.

*Colours for ready mixed paints and enamels (*third revision*).

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	$1\ Pa = 1\ N/m^2$