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Government of India
MINISTRY OF TRANSPORT
(Department of Railways)
(RAILWAY BOARD)

TECHNICAL SPECIFICATION

FOR

PILOT INDICATING PANEL WITH LEDs

FOR 25 kV AC ELECTRIC LOCOMOTIVES

(98;9

Specification No. SPEC/E-14/3/01

NOVEMBER 1985

Issued by:

RESEARCH DESIGNS & STANDARDS ORGANISATION

LUCKNOW-226011.

PREAMBLE

Pilot indicating lamps are used on electric locos for showing the state of important equipments like circuit breaker, main rectifier, battery charger, etc. which require constant monitoring for reliable operation of locomotive. 110 Volts incandescent lamps along with coloured fixtures are at present used for all types of electric locos. These incandescent lamps as well as the brass holder for fixtures are very much prone to pilferage. The incandescent lamps are prone to getting fused resulting in poor reliability of the pilot indicating system. To eliminate these inherent drawbacks of the existing indicating panel with incandescent lamps, the use of light emitting diodes for this indicating panel was thought of quite a few years ago. Since then, many Railways/Electric Loco Sheds have provided different types of LED indicating panels on the electric locos of their Railways. Different Railways/Loco Sheds have used different size of LEDs, series dropping resistance with different number of LEDs in a cluster for one indication. The need for standardisation of this LED panel was, therefore, being greatly felt. The present technical specification gives the details of ratings and particulars as well as dimensions of various components of the LED panel including the type test and routine test to be carried out on the panel before being declared fit for use on locomotive. The railways may either fabricate these indicating panels in their Sheds/Workshops or obtain from Trade as they deem fit. For guidance of Railways, one prototype indicating panel, which has successfully undergone vibration test as well as performance trial on electric locomotive, is available at the Electrical Directorate of RDSO. The same may be seen here if felt necessary and in case of ambiguities or doubts, reference should be made to D.G./RDSO/Lucknow for any clarification.

1. SCOPE :

1.1 The specification gives the requirements, assembly details and internal circuit scheme for pilot indicating panel with LEDs for 25 kV AC Electric Locomotives.

2. SERVICE CONDITIONS :

2.1 The indicating panel will operate at an ambient temperature varying from 0°C to 60°C and with maximum humidity of 100% in an altitude of 1000 meters above mean sea level and dusty atmospheric conditions.

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2.2 The indicating panel shall be of robust design and duly approved by RDSO for traction duty and shall withstand satisfactorily the vibration and shocks normally encountered in service as indicated below

a) Maximum vertical acceleration - 1.0 g.

b) Maximum transverse acceleration. - 2.0 g.

c) Maximum longitudinal acceleration - 3.0 g.

(g is acceleration due to gravity).

3. RATING AND OTHER PARTICULARS :

3.1 The indicating panel will comprise six sets of LED in cluster of six LEDs per set in 3 series and 2 parallel combination operated by a DC voltage of 70 to 130 V as shown in Drg.No. SKEL-3854.

3.2 Each indicating panel shall have 7 Nos. of terminal blocks of M5 size screw with proper plain and spring washers for connecting socketted 3 mm^2 cable, generally conforming to the Drawing No.SKEL-3854 of the specification.

3.3 The indicating panel will be provided with anodised aluminium chemically etched name-plates.

3.4 The LEDs used shall be of 5 mm dia and rated for continuous operation.

3.5 Series dropping wire wound resistors of 10 Kilo ohms, 5 W ratings as shown in the internal circuit in Drawing No.SKEL-3854 shall be incorporated in the assembly and housed in the common housing.

3.6 The negative side of the unit shall be provided with blocking diode (as shown in the Drawing) of 1 ampere, 1000 V, PIV rating.

3.7 The indicating panel shall be manufactured as per the assembly details shown in Drawing No. SKEL-3854. The colour scheme for LEDs is also shown in the drawing.

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4. TESTS :

The following tests are to be carried out on the indicating panel: ,

	TYPE TESTS	ROUTINE TESTS
4.1	Checking of the dimension of the indicating panel with the drawing and visual check of the quality.	Same as type test.
4.2	Performance checking by giving 110 V DC supply to the terminal blocks. The supply will be varied from 70 V to 130 V (in working range of control circuit voltage) and the voltage shall be applied continuously for a period of 24 hours.	Only performance checking by giving 110 V DC supply to the terminal blocks for a moment.
4.3	Determination of insulation resistance with respect to earth by shortening the terminals with the 500 V megger.	--
4.4	Vibration test as per IEC: 77 Clause 16 & 3.1.3 and IEC: 571 Clause 28.	--

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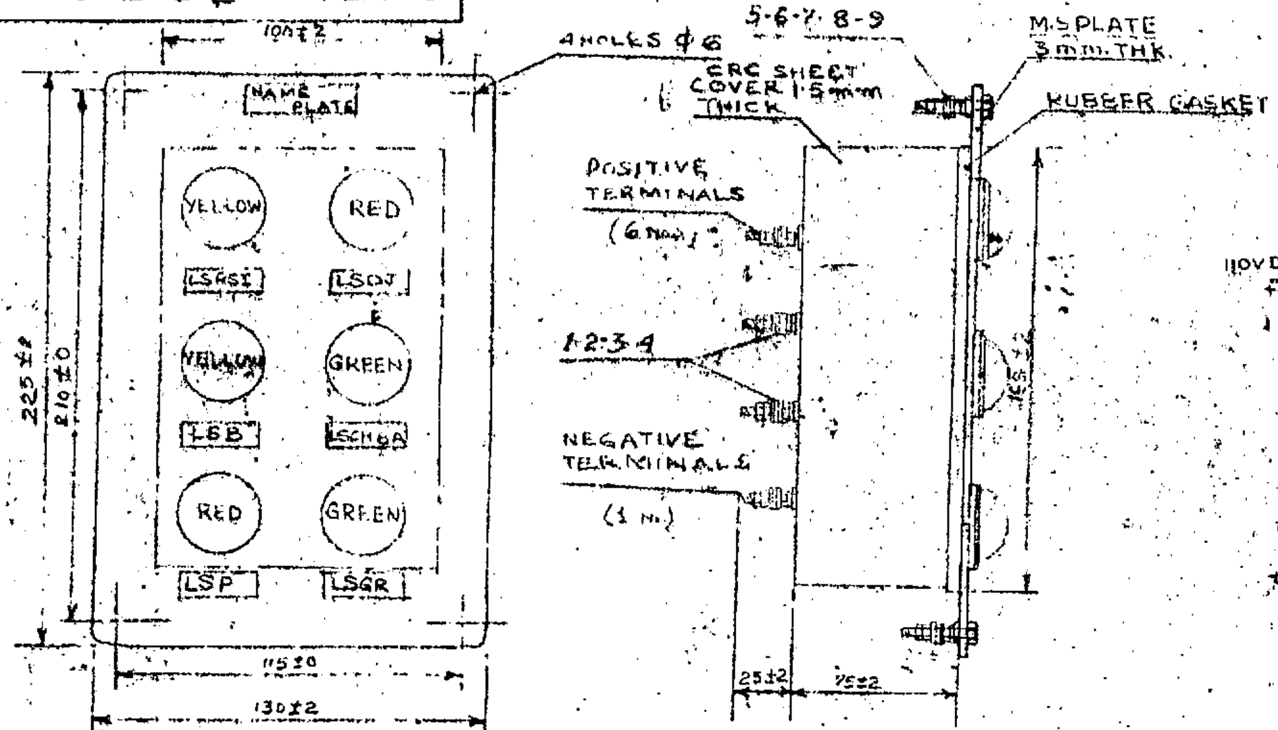
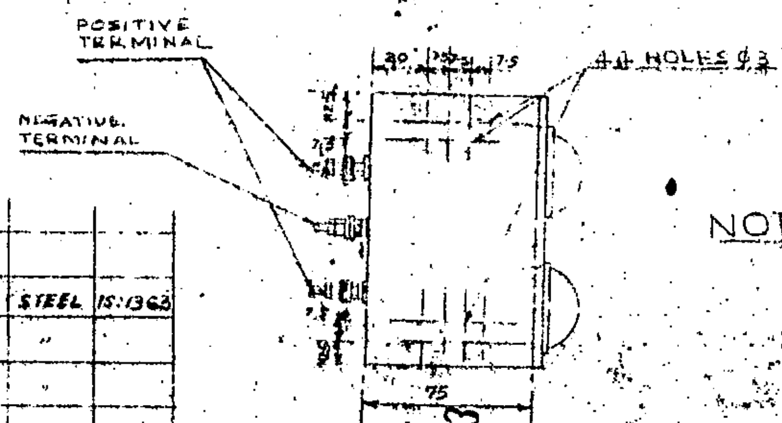
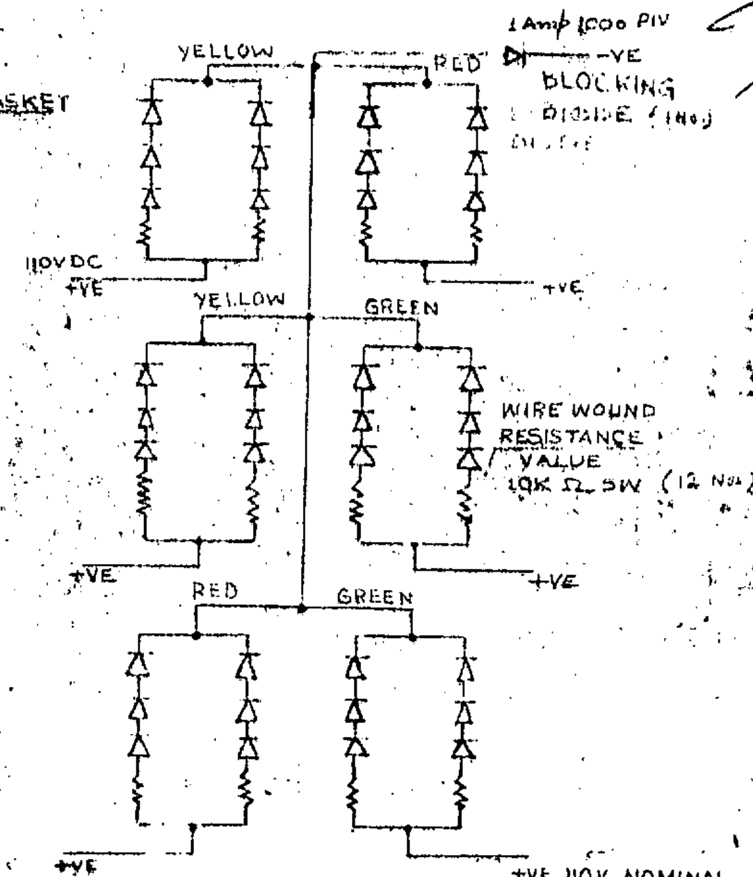
SKEL-3854







INTERNAL CIRCUIT

NOTE:-

1. ALL DIMENSIONS ARE IN mm.
2. THE LETTERS TO BE ENGRAVED ON THE SIGNAL LAMP BOX. M.S. PLATE OF 3mm THK & SHALL BE FILLED WITH WHITE PAINT THE PLATE SHALL BE PAINTED WITH BLACK ENAMEL.

S.NO.	DESCRIPTION	QTY.	MTLS.	SPECN.
9	SCREW, HEX HD M6×25 LG	4	STEEL	IS:1363
8	HEX HD NUT M6	8	"	
7	CHECK NUT M6	4	"	
6	PLAIN WASHER M6	8	"	
5	SPRING WASHER M6	4	"	
4	SPRING WASHER M5	7	BRASS	IS:3063
3	PLAIN WASHER M5	14	"	IS:2016
2	CHECK NUT M5	7	"	
1	HEX HD NUT M5	14	"	IS:1364

REF:-	SCALE:- NTS	APPROVED:-

PILOT INDICATING PANEL WITH LEDs

RDSO ELLC. DTL. | SKEL-3854

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