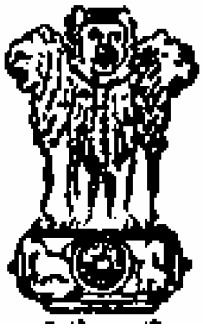

सत्यमेव जयते

INDIAN RAILWAY STANDARD SPECIFICATION FOR ROUTE INDICATOR DIRECTION TYPE 5 LAMPS UNIT ARMS (1 to 6 Way) (Tentative)

SPECIFICATION NO. IRS: S 66 / 1984

Revision 0.0
With Amendment 1

Number of pages: 16

SIGNAL DIRECTORATE
RESEARCH DESIGNS & STANDARDS ORGANISATION
LUCKNOW-226011

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Title of Document **Indian Railways Standard Specification for Route Indicator Direction Type, 5 lamps unit arms (1 to 6 way)**			
Authors **Director/ Signal/ RDSO**			
Approved by **Sr. Executive Director/ Signal, RDSO**			
Abstract This document specifies Technical specification for Route Indicator Direction Type 5 lamps unit arms (1 to 6 way)			

DOCUMENT CONTROL SHEET

NAME	ORGANIZATION	FUNCTION	LEVEL
Director/ Signal	**RDSO**	**Member**	**Prepare**
Sr. Executive Director/ Signal	**RDSO**	**-**	**Approve**

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Converted By: R. G. Gupta,
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Asstt. Design Engineer

AMENDMENTS

Version	Chapter/ Annexure	Amendment	Effective date
IRS: S-66/1984	-	FIRST ISSUE	1984
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GOVERNMENT OF INDIA
(MINISTRY OF RAILWAYS)
(Railway Board)

सत्यमेव जयते

INDIAN RAILWAY STANDARD SPECIFICATION
for
ROUTE INDICATOR DIRECTION TYPE
5 LAMPS UNIT ARMS
(1to 6 Way)

(TENTATIVE)

Serial No. S 66-84

0. FOREWORD

0.1 This specification is issued under the fixed serial No. S 66, the final number indicates the year of original adoption as std. or in the case of revision, the year of last revision.

ADOPTED, 1984

0.2 This specification requires reference to the following Indian Railway Standard (IRS) Indian Standard (IS) and British standard (BS) specifications, which shall also be complied with to the extent applicable.

IRS: S7	Roundels and Lenses.
IRS : S 23	Electrical Signalling and Interlocking equipment.
IRS: S 57	Electric lamps for Railway Signalling.
IS: 104	Ready mixed paint, brushing zinc chrome, priming.
IS: 154	Ready mixed paint, brushing dead black, for use on metals.
IS: 617	Aluminium and aluminium alloy ingots and castings for general engineering purposes.
IS: 2074	Ready mixed paint, red oxide-zinc chrome priming.
BS: 376	Railway Signalling symbols, wiring symbols (Pt. 2) & written circuits.

0.3 Wherever in this specification, any spec. or drg. is referred to by number only without mentioning the year of issue or alteration number, the latest issue of that specification or drg. is implied.

0.4 This specification is intended chiefly to cover the technical provisions and the provisions relating to the supply of the equipment and so does not include all the necessary provisions of a contract.

1. SCOPE

1.1 This specification applies to Route Indicator Direction Type, 5 lamps unit arm (1 to 6 way) used in Rly. Signalling.

1.2 This specification gives details of rated voltage, general requirements, operating characteristics and tests.

1.3 This specification does not cover the wiring and protective devices used in conjunction with Route Indicator Direction Type, in its installation.

2. TERMINOLOGY

2.1 The terminology referred to in this specified is covered by IRS specification S 7 and S 23.

2.2 The terms referred to in this specified but not covered in IRS spec. S 7 and S 23 are defined below:-

2.2.1 **Route Indicator, Direction Type** – An indicator used in conjunction with a fixed signal to give the driver a clear and distinctive indication of a diversionary route ahead for which the signal has been taken off, by means of a row of five lunar white lights.

2.2.2 **Doublet Combination Lens**- A matched combination of an inside step outer lens and an outside step inner lens for the efficient utilization of light flux in a Route Indicator, Direction Type.

2.2.3 **Range**- Longitudinal distance at which, under most adverse conditions of day time visibility the indication of indicator will be clear and distinct to a person with normal vision.

2.2.4 **Close up Indication**- An indication provided for drivers when at close range near the signal. This is obtained by providing a deflecting prism or a moulded deflecting sector in the outer lens so as to deflect a portion of light beam in the intended direction from the axis of the main beam.

2.2.5 **Light Unit**- An assembly of lenses, Lamp holder unit, electric lamp and frame.

2.2.6 **Top of post mounting**- Route Indicator Direction Type, for mounting at the top of signal post.

2.2.7 **Base Mounting**- Route Indicator, Direction Type for mounting on flat surface.

2.2.8 **Sighting Arrangement**- An arrangement provided on Route Indicator, Direction Type for the purpose of checking the alignment of the Route Indicator in respect to the track it controls.

3. RATED VOLTAGE

3.1 The rated voltage of Route Indicator, Direction Type shall be 110 volts, 50 Hz AC.

4. GENERAL REQUIREMENTS

4.1 Means shall be provided for independent vertical and horizontal adjustment of the Route Indicator for accurate alignment of the projected light beam in respect to the track which it controls.

4.2 A suitable type of device on the Route Indicator, Direction Type shall be provided and used for focusing the light units on to the required point at site.

4.3 Assembly and seating of light unit of Route Indicator, Direction Type shall be so designed that the projected light beams from all units of Route Indicator are parallel to each other.

4.4 Covers and lenses shall be provided with durable water proof gasket fastened securely in place to prevent the ingress of dust and moisture.

4.5 A screened breather shall be provided to ensure ventilation in center and each arm unit.

4.6 Mounting socket shall be suitable for top of post mounting on 90 or 139.7 mm outside dia or flat surface mounting.

4.7 Suitable weather proof entrance for cable and means for clamping the cable shall be provided.

4.8 Terminals for external connection shall be housed in the bottom portion of the center unit.

4.9 A hood shall be provided for each light unit projecting substantially at right angles to the body of center unit and arm unit and covering not less than 250 mm around the lens opening and shall not be less than 300 mm long.

4.10 The design of the hood shall be such as to prevent the possibility of phantom indication due to sun at low altitudes as also to minimize the likelihood of snow or ice accumulating on the lens.

4.11 A back ground of suitable size shall be provided on arm units. The overall width of Route Indicator, Direction Type with horizontal arm with back grounds on both right and left sides of the center unit shall be not more than 1950 mm.

4.12 Route Indicator, Direction Type shall have the facility of arranging the unit combination as per sketch at Appendix 'A'.

5. CENTRE UNIT

5.1 The center unit shall contain the center light which is required for all indications together with the first light of each indication spaced around it.

5.2 Centre unit shall be of Aluminium / Aluminium alloy as per IS : 617, strong, weather proof, light in weight, octagonal or round in shape and size to properly house, without crowding the apparatus and wiring contained therein suitably arranged for convenient and ready access.

5.3 The centre unit shall contain arrangement for all positions of arm mounting. For positions which are not in use, blanking plates with suitable gaskets shall be provided.

5.4 Arrangement shall be provided for rigidly securing and sealing and/locking the door of center unit.

5.5 The door when open shall permit easy access to all parts.

6. ARM UNIT

6.1 Arm unit shall be of Aluminium / Aluminium alloy as per IS : 617, strong weather proof, light in weight and of size to properly house, without crowding the apparatus and wiring contained therein, suitably arranged for convenient and ready access.

6.2 Arrangement shall be provided for rigidly securing and sealing and locking the door of arm units.

6.3 The door when open shall permit easy access to all parts.

7. LIGHT UNIT

~~7.1 The light unit shall be designed to prevent possibility of phantom indication due to external lights.~~

7.1 - The design of light unit shall be such as to prevent the possibility of phantom indication due to external lights.

(Amendment-1)

7.2 A doublet combination lens system shall be employed for each light unit consisting of outside step inner lunar white lens 92 mm dia and inside step outer clear lens of 127 mm diameter.

~~7.3 The design of the optical system shall be such as to ensure a minimum visibility range of 350 metres.~~

(Amendment-1)

~~7.4 The doublet combination lens shall be designed to project a highly concentrated parallel beam of light from the electric lamp, placed with the center of the filament at the focal point of the combination.~~

(Amendment-1)

~~7.5 A suitable means for close up indication shall be provided.~~

(Amendment-1)

~~7.6 The lenses shall conform to IRS: S 7~~

(Amendment-1)

~~7.6~~ ***7.3 - The lenses shall conform to IRS: S 7 (specification for roundels and lenses).***

(Amendment-1)

~~7.7 The lamp for light unit shall be of 3 pin type to SL 33 of IRS: S 57 having a life of 1000 hours. The lamp shall give a minimum light output of 260 lumens.~~

~~7.7~~ ***7.4 - The lamp for light unit shall be of 3 pin type to SL 33 of IRS: S 57.***

(Amendment-1)

~~7.8 The lamp holder shall be so adjusted that the position of the filament of the specified lamp is at the focal point of the lens combination and shall be sealed in position at the factory.~~

~~7.8~~ ***7.5 - The lamp holder shall be so adjusted that the position of the filament of the specified lamp is at the focal point of the lens combination and shall be sealed in position at the factory. At this position, visibility will be more than 100 meters in daylight. (Amendment-1)***

~~7.9~~ 7.6 The contact pressure between the lamp cap and the lamp holder spring shall be maintained between 150 and 200 gms.

(Amendment-1)

8 TERMINALS

8.1 The terminals shall comply with IRS: S 23 unless otherwise specified.

8.2 Separate terminal block for each circuit shall be provided in accordance with the wiring diagram given in Appendix 'B'.

9. WIRING

9.1 The internal wiring shall be arranged as shown in Appendix 'B' and shall conform to IRS: S 23.

9.2 The conductors for the internal wiring shall be insulated and shall be of an approved type. Both ends of the conductor shall be provided with an eyelet of suitable size and labeled.

9.3 Anodised wiring diagram with symbols to BS: 376 part (2) and explanation, if any, in English shall be securely fixed to the inner face of the cover of the center unit.

10. MANUFACTURE

10.1 The manufacturer shall ensure that in addition to all the provisions of this spec. the requirements of IRS: S 23 as applicable and any other spec. and drawings referred to by the purchaser are fully complied with.

10.2 Following shall be in accordance with IRS : S 23 wherever applicable :

1. Material
2. Workmanship
3. Limits and fits
4. Interchangeability
5. Other general requirements of S 23 not covered by this specification.
6. Packing
7. Warranty

11.0 MARKING AND IDENTIFICATION

11.1 Marking and identification shall be to IRS: S 23.

12. FINISH

12.1 Finish of various parts shall be to IRS: S 23.

12.2 Non- reflecting dead black paint to IS : 154 shall be used all over the Route Indicator, Direction Type, after the two priming coats, one of zinc chrome to IS : 104 followed by another of red oxide- zinc chrome to IS : 2074.

13. INSPECTION AND TESTING

13.1 Inspection and tests shall be carried out to ensure that requirements of this spec. and other related spec. are complied with to the extent applicable.

13.2 ~~**Routine Test**~~ ***'Light Beam test' -*** The following test shall be conducted to ensure the adjustment of each Route Indicator unit for straight and parallel beams of light. A screen shall be marked with spots one for each light position of Route Indicator Direction Type, their geographical position being exactly the same as that of the light unit of the Route Indicator Direction Type.

Route Indicator Direction Type under test shall be mounted on an adjustable base approximately 6 metres from and facing the screen. After ensuring that the Route Indicator Unit is vertical and the center unit horizontal the height so adjusted that the centre of light beam (the black spot in the area of light falling on the screen) of light unit of the Route Indicator coincides with the respective spot on the screen.

(Amendment-1)

~~13.3 **Type Test** Test shall be carried out to verify the operating characteristics laid down in clause 7.3.~~

13.3 Routine Tests – The following shall constitute routine tests:

a) Visual Inspection (Cl. 13.6)
b) Light beam test) Cl. 13.2)
c) Contact Pressure test (Cl. 7.6)

(Amendment-1)

~~13.4 **Investigation Test** – All tests specified in IRS: S 23 as applicable shall be carried out.~~

13.4 Type tests – One sample shall be subjected to type tests. The sample should successfully complete these tests. In case of failure, a fresh sample shall be called for and again subjected to these tests. The following shall constitute type tests:

a) Visual Inspection (Cl. 13.6)
b) Visibility test (Cl. 7.5)
c) High voltage test (Cl. 13.7)
d) Insulation resistance test (Cl. 13.8)
e) Contact pressure test (Cl. 7.6)

(Amendment-1)

~~13.5 **Acceptance test** – This test on Route indicator shall be conducted on 10 % of a batch subject to a minimum of one Indicator unit and shall comprise the tests laid down in clause 7.3 and 13.2.~~

13.5 Acceptance tests - Acceptance tests shall be conducted on 10% of a batch subject to a minimum of one Route Indicator unit and shall comprise the following:

a) Visual Inspection (Cl. 13.6)
b) Light beam test (Cl. 13.2)
c) High voltage test (Cl. 13.7)
d) Insulation resistance test (Cl. 13.8)
e) Contact pressure test (Cl. 7.6)

(Amendment-1)

13.6 Visual Inspection - A visual inspection of Route indicator unit shall be carried out to ensure that in addition to all the provisions of this specification, the requirements of IRS:S 23 as applicable and any other specifications and drawings referred to by the purchaser are fully complied with.

(Amendment-1)

13.7 High voltage test - The Route indicator unit shall withstand for one minute a test voltage of 2000V (RMS) applied between all parts of the electric circuits and other metallic parts insulated there from without puncture and arcing. The test voltage shall be of approximately sinusoidal wave form and of any frequency between 50Hz and 100Hz. This test shall be carried out once and only once.

(Amendment-1)

13.8 Insulation resistance test - This test shall be carried out immediately after the high voltage test specified in Cl. 13.7 at a potential of not less than 500 V DC. The insulation resistance shall be measured between individual insulated circuits and earth. The minimum value for each individual insulated circuit shall be not less than 10 megohms.

(Amendment-1)

14. REJECTION

14.1 The Route Indicator, Direction Type or any part thereof that does not comply with any of the requirements of this spec. and or any other spec. and / or drawings as approved by the purchaser will be rejected.

INFORMATION TO BE SUPPLIED BY THE PURFCHASER

1. Requirement of unit combination (Refer Appendix 'A')

2. Mounting arrangement: Type and size (Clause 4.6).

ROUTE INDICATOR, DIRECTION TYPE

WAY	UNIT COMBINATIONS			
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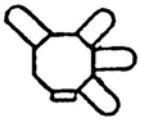
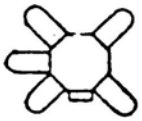
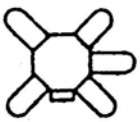
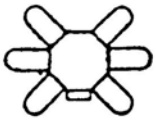
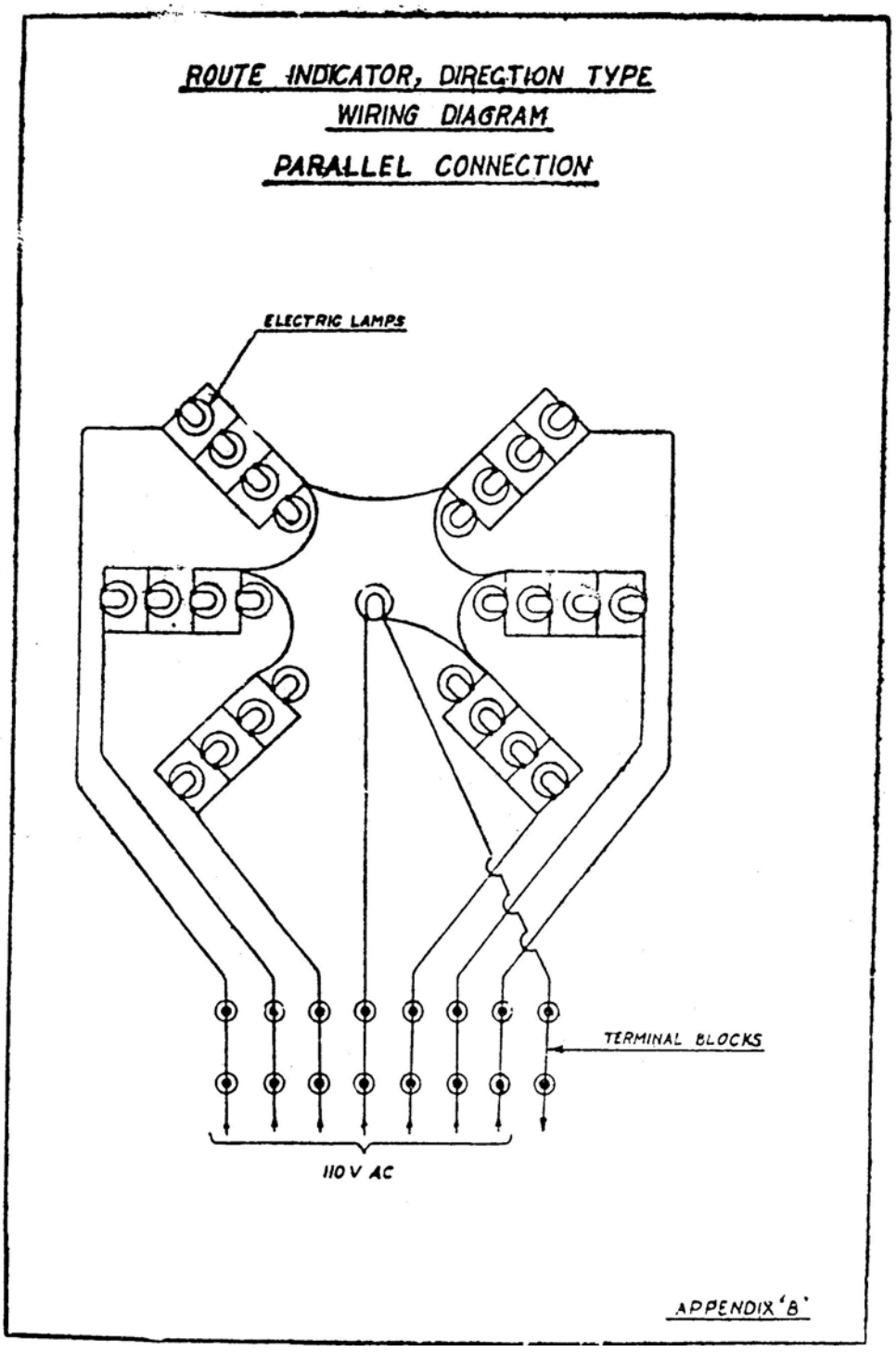
2				
3				
4				
5				
6				

APPENDIX 'A'


ROUTE INDICATOR, DIRECTION TYPE
WIRING DIAGRAM
PARALLEL CONNECTION
ELECTRIC LAMPS
TERMINAL BLOCKS
110 V AC
APPENDIX 'B'

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