INDIAN RAILWAY
STANDARD SPECIFICATION
FOR
ELECTRIC KEY TRANSMITTER ROTARY TYPE
(TENTATIVE)

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Approved by **Sr. Executive Director/ Signal, RDSO**			
Abstract This document specifies Technical specification for Electric Key Transmitter Rotary Type			

DOCUMENT CONTROL SHEET

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

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AMENDMENTS

Version	Chapter/ Annexure	Amendment	Effective date
IRS: S 21/1964		FIRST ISSUE	1964
IRS: S 21/2001		Revision 1	2001

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GOVERNMENT OF INDIA

MINISTRY OF RAILWAYS

(RAILWAY BOARD)

INDIAN RAILWAY

STANDARD SPECIFICATION

FOR

ELECTRIC KEY TRANSMITTER ROTARY TYPE

(TENTATIVE)

0 FOREWORD

0.1 This specification is issued under the fixed Serial No.S21 followed by the year of original adoption as standard, or in the case of revision the year of last revision.

ADOPTED 1964, REVISED 2001

0.2 This specification requires reference to the following specifications:

IRS: S 23 : Specification for Electrical Signalling & Interlocking Equipment.

0.3 Wherever a reference to any specification mentioned in para 0.2 appears in this specification, it shall be taken as a reference to the latest issue of that specification.

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

1. SCOPE

1.1. This specification applies to Electric Key Transmitters for electrical transmission of interlocking keys used in Railway Signalling.

1.2 This specification does not cover external wiring, lightning arrestors and protective devices which are used in conjunction with the key transmitters in their installation.

2. TERMINOLOGY

2.1 The terminology referred to in this specification is covered by IRS specification No. S 23.

3. OPERATING VOLTAGE

3.1 Unless otherwise specified by the purchaser, the rated voltage of the key transmitter shall be 5 Volts D.C.

3.2 The minimum working voltage of the key transmitter shall be 3.75 Volts D.C.

4. MANUFACTURING DRAWING

4.1 The key transmitter shall be manufactured as per Drawing No. SA 22601. A sketch diagram showing the shape of the key transmitter is enclosed for guidance.

5. WORKMANSHIP

5.1 Workmanship, limits, fits and other requirements shall be in accordance with IRS specification no. S 23, wherever applicable.

6. GENERAL REQUIREMENTS

6.1 The key transmitter shall be such as to receive an interlocking key of an approved type.

6.2 It shall not be possible to insert and operate the lock by any other key except the one for which the key transmitter is intended.

6.3 The tumblers proving the wards of the key shall be provided with an arrangement to force them back to their normal position before the key can be extracted.

6.4 The transmitting key shall get locked in the key transmitter before the control can be transmitted to key instrument at the other end.

6.5 It shall not be possible to extract a key once inserted and locked in the key transmitter unless it is released by the electrical control received from the other end.

6.6 It shall not be possible to transmit control to the instrument at the other end and simultaneously release the key from the key transmitter transmitting the control.

6.7 It shall not be possible to release the key by jerks or any other irregular means.

6.8 The key transmitter shall be suitable for operation on two wires.

6.9 A suitable design of LED based indication shall be provided.

6.10 There must not be opening giving access to the interior of the key transmitter through which it is possible to operate the mechanism by any irregular means.

6.11 Facility shall be provided for locking and/or sealing the key transmitter.

6.12 The key transmitter shall be of robust construction fit to withstand rough handling.

6.13 In addition to screw, strong adhesive shall be provided between the insulating piece and the drum.

6.14 Where required, immunity from the effects of 25 KV, A.C Electrification shall be provided.

7. SPECIAL FEATURES

7.1 All parts where breakage is liable to cause a failure on the wrong side shall, as far as possible, be forged from solid.

7.2 The electrical lock shall be of gravity type and provided with an efficient forced-drop arrangement.

7.3 The key transmitter shall be provided with an electrical indicator to indicate the incoming and outgoing currents.

7.4 Means shall be provided to avoid the effects of residual magnetism.

8. INSPECTION AND TESTING

8.1 Inspection and tests shall be carried out to ensure that all requirements of this specification, IRS specification S23 and any other drawings and specifications referred to by the purchaser are fully complied with.

8.2 TYPE TESTS

These tests shall be carried out on two nos. of Electric Key Transmitter. The following shall constitute type tests:

(a) Visual Inspection (Clauses 4.1 & 6.1 to 6.14)
(b) Applied High Voltage Test (Clause 14.3.2.1 of IRS:S 23 Part-II).
(c) Insulation Resistance Test (Clause 14.3.2.2 of IRS:S23 Part-II).
(d) Coil Resistance Test (Clause 8.5).
(e) Pick up Voltage Test (Clauses 3.1 and 3.2).
(f) Contact pressure Test (Clause 8.6).
(g) Performance Test (Clause 8.7).
(h) Climatic Test (Clause 8.8)
(i) Key Extraction Checking Test (Clause 6.5 to 6.7)

8.3 ACCEPTANCE TESTS

These tests shall be conducted on 10% of a batch subject to a minimum of two nos. of Electric Key Transmitter and shall comprise the following.

(a) Visual Inspection (Clauses 4.1 & 6.1 to 6.14)
(b) Applied High Voltage Test (Clause 14.3.2.1 of IRS:S 23 Part-II).
(c) Insulation Resistance Test (Clause 14.3.2.2 of IRS:S23 Part-II).

(d) Coil Resistance Test (Clause 8.5).
(e) Pick up Voltage Test (Clauses 3.1 and 3.2).
(f) Contact pressure test (Clause 8.6).
(g) Key Extraction Checking Test (Clause 6.5 to 6.7)

8.4 ROUTINE TESTS

Every assembled key transmitter shall be subjected by the manufacturer to Routine tests, which shall comprise the following:

(a) Visual Inspection (Clauses 4.1 & 6.1 to 6.14)
(b) Applied High Voltage Test (Clause 14.3.2.1 of IRS:S 23 Part-II).
(c) Insulation Resistance Test (Clause 14.3.2.2 of IRS:S 23 Part-II).
(d) Coil Resistance Test (Clause 8.5).
(e) Pick-up Voltage Test (Clauses 3.1 and 3.2).

8.5 COIL RESISTANCE TEST

Unless otherwise specified by the purchaser, the resistance of the coil shall be 14.6 ohm ± 5% at 20°C.

8.6 CONTACT PRESSURE TEST

The initial contact pressure in closed position when measured very near the point of contact shall not be less than 180 gm.

8.7 PERFORMANCE TEST

The key transmitters shall be tested for 50,000 cycles of operation. On completion of the test, the key transmitters shall continue to operate satisfactorily and the loss in contact pressure shall not exceed 10 percent of the initial contact pressure.

8.8 CLIMATIC TESTS

8.8.1 The following environmental tests shall be conducted on the key transmitter in the under -mentioned sequence.

8.8.2

S.No	Name of Tests	Part & Section of IS:9000	Recovery Period
1.	Dry heat test at 85°C ± 2°C (one cycle of 16 hours)	Part-III/ Section 3 of 1977 issue	2 hours
2.	Cold test at -10°C ± 3°C (one cycle of 16 hours)	Part-II/Section 3 of 1977 issue	2 hours
3.	Damp heat cycle test (one cycle of 12+12=24 hours) (upper temperature 55°C)	Part V/Section 2 of 1981 issue	2 hours

8.8.3 After the climatic tests, the key transmitters shall be checked for satisfactory operation and also for compliance with clause 14.3.2.2 of IRS: S 23 Part-II (Insulation Resistance Test).

9. MARKING & IDENTIFICATION

9.1 The marking and identification shall be done in accordance with clause 16 of IRS specification S 23, Part-II.

10. PACKING

10.1 The key transmitters shall be packed in suitable wooden boxes containing not more than eight units in each. The wooden boxes shall be provided with thermocol packing on the inner surface all around to avoid damage during transit.

10.2 The packing shall be such as to permit convenient handling and to protect against loss or damage during transit and storage.

APPENDIX

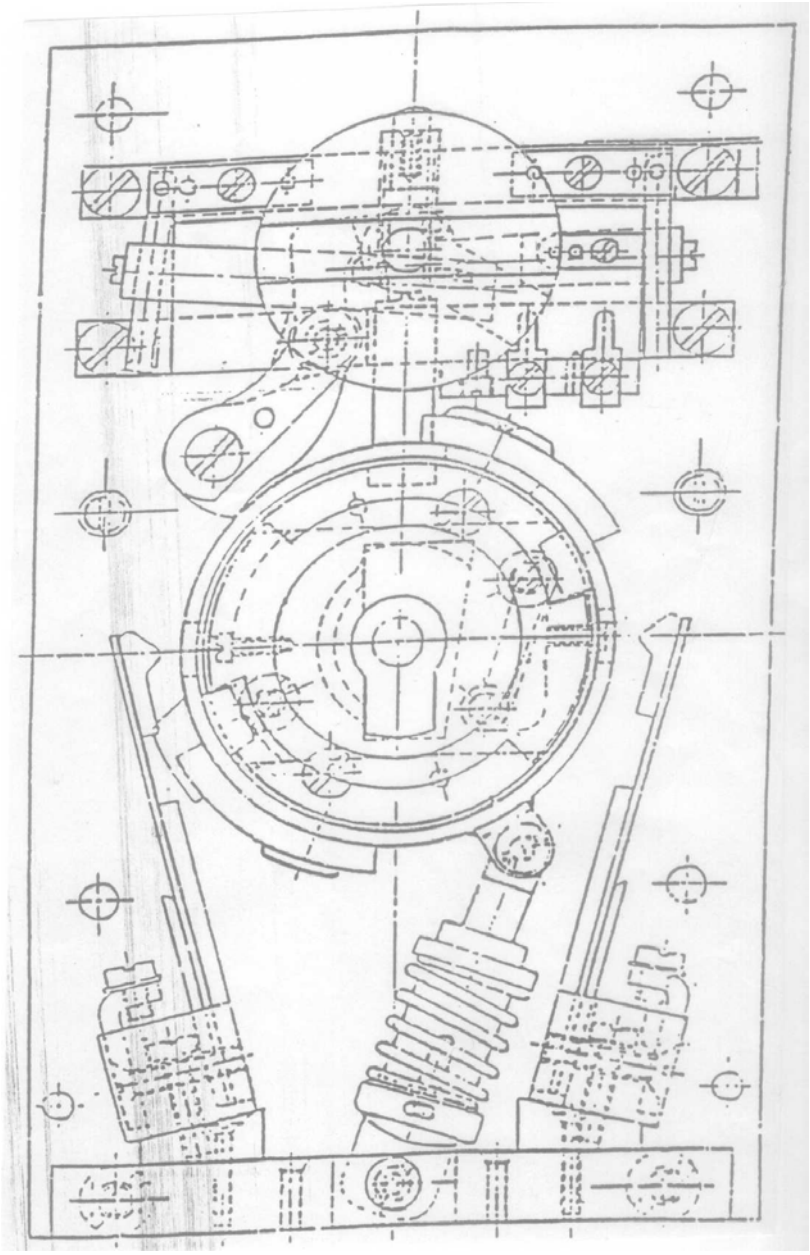
Requirements to be specified by the purchaser:

(i) The type of key with its ward, lug and feather particulars for use with the key transmitter (Clause 6.1).

(ii) The resistance of coil at 20°C. (Clause 8.5).

(iii) Whether immunity from the effects of A.C. electrification is required (Clause 6.14).

Electric key Transmitter
(Rotary Type)
Drawing no. SA 22601



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