

Document Title : **Schedule Of Technical Requirement (STR)FOR
(Relays)**



GOVERNMENT OF INDIA

Ministry of Railways

Schedule Of Technical Requirement (STR)

FOR

(Relays)

**Research Designs & Standards Organisation
Manak Nagar Lucknow – 226 011**

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| Approved by | Sr. Executive Director / Signal |
| Signature | |
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DOCUMENT DATASHEET

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| Document No. | | Version 1.0 d1 |
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| Abstract This document defines STR for Relay | | |

| <u>Version</u> | <u>Chapter/ Annexes</u> | <u>Amendments</u> | <u>Issue date</u> |
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RELAYS

List of specifications for various types of Relays

| S.No. | Item Description | Specification No. |
|-------|--|--|
| 1. | RELAYS — 'Q' SERIES ECR (M TO C CONTACT) | BRS : 941 & 942 |
| 2. | RELAYS — 'Q' SERIES NEUTRAL LINE | BRS : 930A & 931A |
| 3. | RELAYS — 3 POSITION DC POLARISED | IRS : S 31/80 |
| 4. | RELAYS — ECRs (M TO M CONTACT) | IRS : S 46 with amendment 1 & Firms Specification |
| 5. | RELAYS — NEUTRAL LINE (M TO M CONTACT) | IRS : S 46 with amendment 1 & Firms Specification |
| 6. | RELAYS — NEUTRAL LINE SHELF TYPE | BS : 1659/50 upto amendment no. 3 |
| 7. | RELAYS — SPECIAL TYPE | BRS : 930, 932A, 933A, 934A, 935A, 937A, 943, -960 etc |
| 8. | RELAYS — TRACK PLUG IN TYPE 9 & 4 OHM | BRS : 938A, 939A, 966 & APPENDIX 'F2' |
| 9. | RELAYS — TRACK SHELF TYPE | BS : 1659/50 upto amendment no. 3 |
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| SN | Item Description | Specifications |
|----|---|--|
| 1 | RELAYS -- Universal Plug-in type AC Lamp Proving Relay (M-to-C Contact) for LED Signal Lamp | BRS:941A ,STS/E/RELAYS/AC LIT LED SIGNAL/09-2002 ,Amend-1 |
| 2 | Relays -- Plug-In Type Tractive Armature, AC Lamp Proving Relay (Metal-To-Carbon Contact) Signal Lamp (ON, OFF, ROUTE, SHUNT ECR) | BRS:941A & 942 |
| 3 | Relays - 'Q' Series Neutral Line (ACI & NON-ACI) | BRS:930 & BRS:931A |
| 4 | Relays – Plug in Type, Track Relay 9 & 4 Ohm (ACI & Non-ACI) | BRS: 938A, 939A, 966 & Appendix F2 |
| 5 | Relays – Special Type (Metal-to-Carbon) | BRS: 930, 931A, 932A, 933A, 934A, 935A, 937A, 943, 960 & RDSO/SPN/84 ver.2.0 Amend-1 |
| 6 | Relays - ECRs (Metal-To-Metal Contact) (ON, OFF, ROUTE & SHUNT aspect) | IRS:S-46 Amend-1 & Firm's Specn. |
| 7 | Relays - Neutral Line (Metal-to-Metal Contact) , (ACI & Non-ACI) | IRS:S-46 Amend-1& firm's specn. |
| 8 | Relays – 3-Position DC Polarized (Metal to Metal) | IRS:S-31/80 (Amd.1) |
| 9 | Relays – Special Type (Metal to Metal) | IRS:S-46 Amend-1 & Firm's Spec |
| 10 | Relay – Metal to Metal 110V AC LED ECR for LED Signal Lamp | IRS:S-46 Amend-1& STS/E/Relays/AC Lit LED Signal/09-2002 with Amdt. No. 1 |
| 11 | Relays – Point Contactor Unit | IRS:S-46 Amend-1& Firm's Spec |

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SIGNALLING RELAYS

I. ESSENTIAL PLANT & MACHINERY REQUIRED FOR PRODUCTION

1. ~~Universal lathe machine~~ Computer Numerical Control(CNC) Machine and Other equipments of machine shop (In house/Outsourced)
2. ~~Drilling machine~~—Electrically Operated Bench Drilling machine
3. ~~Distilled water plant~~ Three stage Distilled water plant with minimum 1 litre/hr capacity for M to C relay
4. **PLC Based** Injection moulding machine (Medium duty-hydraulic)
5. Temperature controlled ~~oven~~ Chamber e.g 180 liters,-40⁰C to+ 150⁰C
6. Electroplating plant (In house/Outsourced)
 - a) Magnetic separator
 - b) Passive plant
 - c) Bright dipping plant
 - d) Lacquering plant
 - e) Pickling & degreasing plant
 - f) Polishing/Buffering machine
7. Temperature Controlled Soldering/de-soldering **Station machine with timer**
8. Coil Winding Machine
9. Ultrasonic vacuum degreasing/cleaning plant **for M to C Relay**
10. Jigs & fixtures
11. Special tools, torque, wrench, torque drivers etc.
12. Air-conditioned space for final assembly & testing of relays. Remaining working space including store shall be dust free.

II. ESSENTIAL TESTING EQUIPMENTS REQUIRED FOR QUALITY ASSURANCE

1. **Digital** Voltmeter of min 4 ¹/₂ Digit
2. **Digital** Insulation tester, 500V DC
3. **Digital** Ammeter of min 4 ¹/₂ Digit
4. Digital bounce/time interval meter
5. **Digital** High voltage break down tester, upto 5KV AC
6. **Digital** DC regulated power supplies
7. Registration and code checking jig
8. Digital multimeter, Min. 4 ¹/₂ digit
9. Digital micro ohm meter
10. **Digital** Contact resistance measurement set up

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11. Test panel for AC immunity test
12. Test panel for non-overlapping bridging test
13. Non-weld ability test set up (**Not applicable for M to C relay**)
14. Thickness tester to check the thickness of Electro plating & surface coating

15. Variable voltage Auto-transformer (VARIAC)
16. GO & NOGO gauges
17. Tension Gauges
18. Feeler Gauge
19. Pressure Gauge
20. Digital micrometer
21. Digital vernier callipers
22. Suitable high efficiency LED indication panel for all configuration
23. Endurance Test facility in a separate room
24. **Automatic test set up with auto record/print facility for measurement of important electrical parameters.**
25. **All Measuring equipment shall be compatible to work with PC/Micro-processor based test set ups.**

Note :-

- i) ~~This STR shall be applicable to all new vendors applying for registration for all relay items.~~
- ii) ~~All existing approved manufacturers shall be advised for implementation of new STR.~~
- iii) ~~A reasonable period for compliance shall be six months from date of issue of STR.~~
- iv) ~~Except item no.1 and 6 of plant and machinery all other items are mandatory to be in house.~~

III. Copy Holder :-

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Note :-

1. Plant, machinery and testing equipments given above are only indicative. All necessary plant and machinery of adequate capacity and testing equipments as necessary to manufacture the product as per RDSO specification and drawings and to ensure quality shall be provided.
2. Outsourcing, if any item related to 1&6 of Machinery and Plants, of any component shall be indicated in the 'Quality Assurance Plan' and approval of RDSO, Lucknow shall be obtained. Outsourcing of a vital component shall be from ISO-9000 certified manufacturer. In case of outsourcing, the ultimate responsibility to ensure quality, reliability and compliance of RDSO specification & drawings for the outsourced component shall be of the vendor of the relay and all necessary tests and checks shall be done by him to ensure the same. Sampling plan and details of tests and checks proposed to be conducted by him on outsourced components shall be indicated in the QAP. Proper test record with traceability to the final product shall be maintained. **The Outsourced firm should have valid ISO certificate**
3. Audit of the manufacturing process of outsourced component in the manufacturing premises shall be carried out by the vendor of the relays at least once a year and report submitted to Director/QA/RDSO. Duly qualified persons having knowledge of the outsourced manufacturing process shall be deputed for audit. **Proper audit record shall be maintained by the firm.** Audit of the manufacturing process of outsourced component in the manufacturing premises shall also be carried out by the RDSO if desire.
4. Checks and tests shown in the Quality Assurance Flow Charts are only indicative. All necessary checks and tests as necessary to ensure quality shall be carried out at every stage of manufacturing and proper record of all checks and tests shall be maintained. **OUTSOURCED** process should be clearly marked in the process flow chart in QAP
5. This STR shall be applicable to all new vendors applying for registration.
6. All existing approved vendors shall be advised for implementation of new STR. A reasonable period for compliance shall be Six months from Issue of STR.
7. **Except item no.1 and 6 of plant and machinery all other items are mandatory to be in house**

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QUALITY ASSURANCE FLOW CHART FOR SIGNALLING RELAYS

