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Schedule of Technical Requirement (STR) for Relays			



GOVERNMENT OF INDIA

Ministry of Railways

Schedule of Technical Requirement (STR)

For

Vendor approval for manufacture and supply of Relays

Research Designs & Standards Organisation

Manak Nagar Lucknow – 226 011

Approved by	Executive Director (Co-Ordination) / Signal
Signature	

SSE/S&T(Insp.)	ADE / Signal-VIII	Director / Signal-VIII
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List of specifications for various types of Relays

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 STS/E/Relays/UEA/PI dated 30.05.97 annexture-1 and II
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. Machine Shop having Computer Numerical Control(CNC) Machine
(In house/Outsourced).
2. Electrically Operated Bench Drilling machine.
3. Three stage Distilled water plant with minimum 1 litre/hour capacity for M to C Relay.
4. PLC Based Injection moulding machine (Medium duty-hydraulic)
(In house/Outsourced).
5. Temperature controlled Chamber 125 liters, - 25⁰C 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/Buffing machine
7. Temperature Controlled Soldering &de-soldering Station.
8. Coil Winding Machine.
9. Ultrasonic vacuum degreasing/cleaning plant for Metal to Carbon 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.

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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
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.

III. Copy Holder :-ED/QA/S&T/LKO

Dir/Signal VIII

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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 1,4 & 6 of Essential Plants and Machinery shall be indicated in the 'Quality Assurance Plan' and approval of RDSO, Lucknow shall be obtained. Outsourcing of items related to 1,4 & 6 of Essential Plants and Machinery as mentioned above shall be from valid ISO certified sources.

In case of outsourcing, the ultimate responsibility to ensure quality, reliability and compliance of RDSO specification & drawings for the outsourced components shall be of the vendor of the Relays 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.

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 can 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. Except item no.1,4 and 6 of plant and machinery all other items are mandatory to be in house.

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