



भारत सरकार – रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
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No. EL/11.5.5/21

Dated: As signed

Principal Chief Electrical Engineers;

- Central Railway, HQs Office, 2nd floor, Parcel Office Bldg., Mumbai – 400 001.
- East Central Railway, Hajipur (Bihar) – 844 101.
- Eastern Railway, Fairlie Place, Kolkata – 700 001.
- East Coast Railway, Railway Complex, Bhubaneswar – 751 023.
- Northern Railway, Baroda House, New Delhi – 110 001.
- North Central Railway, Allahabad – 211 001.
- North Eastern Railway, Gorakhpur – 273 001.
- North Frontier Railway, Maligaon, Guwahati – 781012.
- North Western Railway, Jaipur- 302 006.
- Southern Railway, Park Town, Chennai – 600 003
- South Central Railway, HQs Office, Rail Nilayam, Secunderabad – 500 071
- South Eastern Railway, Garden Reach, Kolkata – 700 043
- South East Central Railway, Bilaspur – 495 004
- South Western Railway, Hubli – 580 020
- West Central Railway, HQs Office, Opp. Indira Market, Jabalpur – 482 001
- Western Railway, Churchgate, Mumbai – 400 020
- Banaras Locomotive Works, Varanasi – 221 004
- Patiala Locomotive Works, Patiala – 147 003.
- Chittaranjan Locomotive Works, Chittaranjan – 713 331.

Modification Sheet No. RDSO/2024/EL/MS/0503 (REV. '0') dated 17/09/2024.

1.0 Title:

Paralleling of interlocks of control circuit contactor to improve reliability of three phase electric locomotives.

2.0 Brief History:

- 2.1 Zonal Railway reported that there are many failure cases in three-phase electric locomotives due to 'Cab deactivated', 'VCB not closing after neutral section', 'Loco not energized', 'Contactor 218 not pick up', 'Fatal error/ Main power off due to life sign missing' and 'Both Panto not raising' etc.
- 2.2 Above messages were seen during testing of locomotives in shed. After detail investigation of these messages, it is found that above messages are occurring due to malfunctioning of interlocks of Control Circuit contactor. In these contactors it is found that interlocks are not making proper contacts causing interruption of supply to further circuit.

2.3 Issue was raised by Central Railway in 41st MSG meeting held at PLW on 21st & 22nd March'2024 and it was concluded that if required, paralleling of interlocks may be done for contactors of spare interlock feeding same circuit only and paralleling of circuit should not be done for those interlocks, which feed different circuits.

3.0 Objective:

To provide additional path for passing the supply through paralleled interlock to enhance the reliability of three-phase electric locomotives on account of failure/malfunctioning of existing interlock.

4.0 Existing arrangement with cross-reference of respective design document:

The circuit of following contactors/relays has revised.

- a. Contactor for power supply Cab: Sch. Pos. 126.7/1&2 : ABB Document no. - 3EHP281165.
- b. Relay control electronics OFF: Sch. Pos. 126.5 : ABB Document no. - 3EHP281165.
- c. Safety Relay control electronics ON: Sch. Pos. 126.6 : ABB Document no. - 3EHP281165
- d. Auxiliary Contactor VCB: Sch. Pos. 136.4 : ABB Document no. - 3EHP281165.

5.0 Modified Scheme to replace existing scheme as given in 4.0:

| SN | Contactor No. | Description | Aux. Contact Or I/L in use | Aux. Contact Or I/L available in spare | Location | Remarks |
|----|---------------|-------------------------------------|----------------------------|--|----------|--|
| 1 | 126.7/1&2 | Contactor Power Supply Cab | 3NO & 1NC | 3NC & 1NO | SB1&2 | Spare NO I/L no. 87-88 to be paralleled with I/L no. 53-54. Spare NC I/L no. 61-62 to be paralleled with I/L no. 75-76. |
| 2 | 126.5 | Relay control electronics OFF | 1 NC & 1 NO | 1NC & 1NO | SB1 | Spare NO I/L no. 43-44 to be paralleled with I/L no. 13-14. Spare NC I/L no. 31-32 to be paralleled with I/L no. 21-22. |
| 3 | 126.6 | Safety Relay control electronics ON | 3NO & 4NC | 1NO | SB2 | Spare NO I/L no. 53-54 to be paralleled with I/L no. 43-44. |
| 4 | 136.4 | Auxiliary Contactor | 1NO | 3NO | SB1 | Spare NO I/L no. 3-4 to be paralleled with |

3179424/2024/O/o PED/TRACTION/RDSO

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|--|--|-----|--|--|--|--------------|
| | | VCB | | | | I/L no. 1-2. |
|--|--|-----|--|--|--|--------------|

6.0 Material required:

1.5 sq. mm control cable – As per requirement.

7.0 Material Render Surplus:

Nil

8.0 Reference:

Decision on item no. 5 of 41st MSG meeting held at Patiala Locomotives Works on 21st & 22nd March'2024 vide this office letter no. EL/2.1.8 dated 11.07.2024.

9.0 Application to the class of locomotive:

Three phase electric locomotives.

10.0 Agency of Implementation:

All PUs, POH Shops, Electric Loco Sheds Holding 3-Phase Electric Locomotives.

11.0 Periodicity of Implementation:

Commissioning, POH, all major and minor schedule.

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Encl: Nil.

For Director General (Elect.)

Copy to:

- Secretary (Electrical Engg./RS), Railway Board, Rail Bhawan, New Delhi-110 001:
(Kind attn.: Sh. Mohit Chandra, PED EE/RS): For kind information.

Encl: Nil.

For Director General (Elect.)