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TRACTION INSTALLATION DIRECTORATE



**GOVERNMENT OF INDIA,
MINISTRY OF RAILWAYS**

Instruction No. TI/IN/0023 (02/2010)

**Instructions for operating RTUs with power supply of 110 V DC (in place of
240 V ac) for existing traction SCADA system on IR**

Feb- 2010

ISSUED BY

**Traction Installation Directorate
Research Designs and Standards Organization
(Ministry of Railways)
Manak Nagar, Lucknow – 226011**

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- 1.0 Scope:** This instruction stipulates the action to be taken by Zonal Railways for operation of Remote Terminal Units (RTU) at TSS, SP/SSP of 25 KV SCADA systems as per RDSO's specification TI/SPC/RCC/SCADA/0990 (5/07) with Amendment No.1. on 110 V dc supply only. The dc supply system has got many obvious advantage over the ac supply system for control in terms of reliability & lesser damage to electronic components.
- 2.0 Background:** Remote Terminal Units (RTU) at TSS, SP/SSP of 25 KV SCADA system as per RDSO's specification TI/SPC/RCC/SCADA/0990 (5/07) with Amendment No.1.system are having provisions for operation on both 240 V ac and 110 V dc power supplies. RTU normally operates on 240 V ac and in case of failure of ac supply, changeover to 110 V dc supply takes place.
- 2.1 Operation of RTU on 240 V ac supply some time affects the performance of RTUs due to:
- The ac supply to RTU is taken from the 25 kV ac traction supply which is having high harmonic contents.
 - Switching surges, fault currents and transients in ac supply cause failures in power supply units of RTU.
 - Poor power quality of ac supply for RTU affects the life of power supply unit and other components of the RTUs.
 - Indian Railways have been reporting number of failures in power supply cards/ modules and other electronic equipment.
- 3.0 Operation of RTU at only 110V dc power supply:**
- To overcome the above problems and to enhance the performance of SCADA system; RDSO advised Northern Railway to conduct trials at Lucknow and Ambala division using only 110 V dc supply of RTU for the period of more than three months and to monitor the performance. Satisfactory performance has been reported so far from there. The SCADA vendors were also consulted and their responses have been affirmative.
- 3.1 SCADA system developed & implemented for Mumbai area as per RDSO specification no. TI/SPC/RCC/SCADA/1080(9/08) with amendment no.1 (7/09) is having provision of 110Vdc power supply. The system is working without any problem for last few months.
- 3.2 Based on above it is now recommended to all the Zonal Railways to shift the existing SCADA RTUs on 110Vdc system in a gradual manner. This should be

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started from RTUs where power supply/card failures are more and complete the entire RTUs in a time bound schedule.

4.0 Modifications at RTUs:

- 4.1 Disconnect the 240V ac power supply to RTU and confirm that the PSU automatically changes over to 110V dc. In case of any difficulty, the OEM/ AMC personnel must verify the availability of 110Vdc output before permanent disconnection of 240 Vac input.
- 4.2 Battery ratings of traction installation are more than sufficient and battery charger keeps them at a floating charge, still it is recommended to keep watch on battery condition.
- 4.3 Monitor the performance of operation of SCADA system and keep the records of card failures prior to & after implementation of the changes.
- 4.4 Performance reports / feedback may please be sent to RDSO for further analysis and improvements in RTU designs.

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Govt of India- Ministry of Railways
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Lucknow-226011

BY REGISTERED POST

TI/RCC/SCADA/SPC/10

Dated: 23.2.2010

Chief Electrical Engineer

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|--|--------------|
| 1. Central Railway, 2 nd floor, Parcel Office Building CST, Mumbai-400001 | 022-22620867 |
| 2. South Eastern Railway, Garden Reach, Calcutta-700 043 | 033-24503643 |
| 3. Eastern Railway, Fairlie Place, Calcutta-700 001. | 033-22300446 |
| 4. Northern Railway, Baroda House, New Delhi-110001 | 011-23387198 |
| 5. Southern Railway, Park Town, Chinnai- 400 003. | 044-25353690 |
| 6. South Central Railway, Rail Nilayam, Secunderabad | 040-27825243 |
| 7. Western Railway, Churchgate, Bombay - 400 020. | 022-22073829 |
| 8. South West Railway, DRM's Office, Hubli (Karnataka) | 080-2282787 |
| 9. West Central Railway , Jabalpur | 0761-2628133 |
| 10. East Coast Railway, Bhubaneshwar | 0674-2302524 |
| 11. East Central Railway, Hajipur | 06224-274459 |
| 12. North Central Railway, Block-A, Subedarganj Rly Stn,
Allahabad.211 033 | 0532-2560934 |
| 13. South East Central Railway, Bilaspur-495004 | 07752-414627 |

**Sub-Instructions for operating RTUs with power supply of 110 Vdc (in place
of 240 Vac) for existing traction SCADA system on IR**

Ref: RDSO's instruction No. TI/IN/0023(02/2010)

Please, find enclosed herewith the copy of above instructions for information and
implementation.

Encl. As above

(Signature)
23/2/2010
(Sumit Bhatnagar)

for Director General/TI