

**Description of MSDAC for Supply**

1. Multi Section Digital Axle Counter (MSDAC) system shall comprise of Axle detectors, DAC field unit, Central evaluator, reset unit, relay unit, event logger, diagnostic terminal and line verification box confirming to RDSO specification no. RDSO/SPN/176/2013, Ver.3 or latest (Inspection by RDSO).
  2. OEM supplied/certified Pre-Fabricated Rack with power supply arrangement for Evaluator (Inspection by RDSO) which is to be supplied along with system (Para 5.5.1) of RDSO specification no. RDSO/SPN/ 176/2013, Ver.3 or latest.
  3. OEM supplied/certified Reset Box as per drawing no RSDO/S/20001 (Inspection by RDSO).
  4. OEM supplied / certified Tool Kit with marking Zig (One set for every 20 DP or part thereof) consisting of all tools and measuring instruments required for installation, testing, failure attention and all types of maintenance of MSDAC; to be supplied along with main equipment (Inspection by RDSO) confirming to item no. 20 of RDSO specification no. RDSO/SPN/176/2013, Ver.3 as updated by RDSO from time to time.
- However, if RDSO declines to inspect, then it will be inspected by authorized representative of railways.
5. OEM supplied Line Verification Boxes as per drawing no. RDSO/S/20002. (Inspection by RDSO)
  6. OEM supplied/certified Mushroom cover/ Half apparatus case(s) (If required for installation) for track-side equipment/each detection point housing (Inspection by RDSO for OEM supplied/certified Mushroom cover; Consignee/RITES for half apparatus case as per latest Railway Board guideline on Inspection of Material). Quantity of Mushroom Cover/Half apparatus case shall be same as that of detection point.
  7. OEM recommended lightning and surge protection devices for all sub-systems as per RDSO specification no. RDSO/SPN/144/2006. (Inspection by RDSO) as per Para 5.0.24 of RDSO/SPN/176).
  8. Instruction manuals, installation manual & maintenance manuals including DO's Don'ts, mechanical drawing for each subsystem, schematic block diagram showing mounting arrangement of various component & details of each type of assembled PCB, troubleshooting manual, pre-commissioning check list and other technical information regarding MSDAC supplied (As per item no. 18 of RDSO specification no. RDSO/SPN/176/2013, Ver.3 as updated by RDSO from time to time).
  9. Supply of Event logger (In-Built) & diagnostic terminal with monitoring software (one set).
    - a) Event logger Diagnostic software (Inspection by RDSO). (One Set per evaluator Rack in separate Pen drive as per Para 5.9.1 of RDSO/ SPN/176).
    - b) Event logger Diagnostic PC (Inspection by consignee) – One system per Evaluator Rack as per following specification:
      - i. CPU: - Intel i5 or latest
      - ii. Processor Family: 8<sup>th</sup> Generation or higher
      - iii. Cache: - 8 MB or higher

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- iv. RAM: Minimum 8 GB, DDR-4 or better
  - v. Hard Disc Drive – Min 1 TB SATA
  - vi. Parts – 2 serials, 2 USB-2, 2 USB-3, 2 PCI slot
  - vii. Monitor 22-inch LED flat panel, resolution 1920x1080 at 60 Hz or better
  - viii. Network Interface: Integrated 10/100/1000 GbE LAN
  - ix. Wireless: 802.11a/b/g/n Wi-Fi and Bluetooth
  - x. Keyboard: QWERTY
  - xi. Optical scroll mouse
  - xii. Optical Drive: DVD
  - xiii. Audio: 2.1 speaker;
  - xiv. Antivirus single license for 3 years for single user;
  - xv. Operating System-Windows 10 or latest pre-loaded with license and MS office 2018 or higher with license and media.
  - xvi. Connecting cord between Evaluator and PC;
  - xvii. Suggested module makes Compaq, HP, Lenovo, Dell, Acer or Wipro.
10. LaserJet printer (size A4, minimum 20 copies per minute, black and white) suggested brand-DP/DELL/CANON (Inspection by consignee)- Along with Diagnostic PC.
11. Table: Godrej make interio Companion C3 Engineered Wood computer desk or similar (Inspected by consignee). (1 No per Hut/Station)
12. Chair: Godrej make PCH-7003 premium Executive chair or Similar (Inspected by consignee). (1 No per Hut/Station)
13. All empty slots in card-file shall have dummy cards fitted to prevent entry of lizards, etc.
14. Training on installations, maintenance & trouble shooting shall be imparted to Railway Personnel at site or at OEM's premises (10 man-days for 20 DP's or part thereof).
- a) Training shall be organized for OL and Project staff & officers through the OEM/agency before commencement of work and proper record shall be maintained.
  - b) During programming, testing and commissioning one more round of training shall be organized for the OL staff to have better understanding of the product going to be commissioned.
  - c) During the training each of the attendee shall be given copy of the training manual and copies of the approved document without any exception.
15. The warranty of the equipment should be in accordance with IRS specification No. S-23. The duration of warranty shall be as per Indian Railway Standard Conditions of Contract, vide Para-417 of Indian Railway Code for Store Department and clause 3202 & 3203.
- a) The contractor also guarantees that the said goods/stores/ articles would continue to conform to the description and quality as aforesaid, for a period of 30 months after their delivery or 24 months from the date of placement in service whichever shall be sooner, and this warranty shall survive notwithstanding the fact that the goods/stores/articles may have been inspected, accepted and payment thereof by the purchaser.

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- b) If during aforesaid period, the said goods/stores/articles be discovered not to conform to the description and quality aforesaid or have deteriorated, otherwise that by fair wear and tear the decision of the purchaser in that behalf being final and conclusive that the purchaser will be entitled to reject the said goods/stores/articles or such portions thereof as may be discovered not to conform to the said description and quality. On such rejection, the goods/stores/articles will be at the seller's risk.
- c) During the period of warranty, the supplier shall remain responsible to arrange for replacement and for getting right at his own cost of any equipment supplied by him which is defective during manufacturing or defective in design or due to defective material component or due to any cause what's ever.
- d) All replacement and repair and design change that the Railway shall call upon the supplier to perform under this warranty period within one month, properly and satisfactorily.

16. Signalling Plan of the section/station is attached. The supplier will submit following documents along with the offer.

i) 6 quad cable plans.

ii) Breakup of number of each cards/modules & other accessory authorized by OEM/its RDSO approved Indian partners for each Hut/Station as per Table given below.

S N	Description of Card / Sub-assembly / items	Part No.	Unit	Quantity in No

iii) Cable length of each track device shall be 10 meters or as specified by purchaser.

17. Materials, which are not in the list of RDSO, shall be inspected by the Consignee.

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**Details of MSDAC Transportation, Installation, Testing and Commissioning.**

1. Transportation, Installation, Testing & Commissioning Multi Section Digital Axle Counter (MSDAC) as per approved yard layout with Reset unit, Relay unit, Evaluator(s), line verification boxes, Power supply, event loggers, diagnostic terminals, programming etc. with supply of all necessary cable, connectors, fixture, clamps.
2. Individual Earthing of all detection Points shall be provided by the tenderer if required by the OEM. The earth value shall be within the limits recommended by the OEM & those shall be certified by OEM site engineer. If required, multiple earth-pits to be installed to bring earth value within limit, in each location. This includes supply & installation of maintenance free earth materials and exothermic bonding and other connecting cable etc. as per Railway practice (As per RDSO Spec no: RDSO/SPN/197/2008 or Latest).
3. Provision of Earthing should be there in the Central evaluator, field unit, reset Box and other locations prescribed by OEM/RDSO.
4. Evaluators & resetting equipment to be connected to the EI Ring earth. (Central Relay room/Goomty). (EI ring earth will be provided by Railway). The earth connection between Evaluator / Resetting equipment to Ring earth will be dealt by the MSDAC supplier.
5. Foundation & erection of Track side Equipment i.e. Mushroom/ Location Box (if required).
6. In case the track side equipment is fixed in location box, separate location earthing to be done and value should be less than 1 ohm. This included supply of all associated materials and execution. The earth of location Box / mushroom to be connected with the detection point earth.
7. Installation of Event logger & diagnostic terminal with monitoring software at Maintainers room and connectivity from evaluator to Diagnostic terminal.
8. Submission and approval of documents.
  - a) The following documents, in addition to the documents specified in item no. 18 of RDSO specification no. RDSO/SPN/176/ 2013, Ver.3 as updated by RDSO from time to time, shall be submitted by the agency to the field unit for approval before commencement of actual work.
    - i) Evaluator summary, DP summary and evaluator communication summary.
    - ii) MSDAC DP plan.
    - iii) Rack-wise evaluator allotment plan.
    - iv) Wiring Diagram.
    - v) MSDAC DP connection between 2 CTRs.
    - vi) Reset box disposition & resetting arrangement.
    - vii) Cable core plan.
    - viii) Quad allocation plan.
    - ix) For each track section, relay drive evaluator, direct DP and indirect DP connected to the valuator to be shown in a tabular format.
    - x) Pre-commissioning check list and other technical information regarding MSDAC supplied (One copy for each evaluator).

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b) Hard copy and soft copy in PDF format shall be submitted by the supplier.

9. For each installation / location of evaluator the supplier should give following information regarding power requirement.

S N	Supply voltage nominal with range	Load requirement in ampere

10. Materials, which are not in the list of RDSO shall be inspected by the Consignee.



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Item-wise details / Quantity / rates of MSDAC of each station/Hut.

SN	Description of Card / Sub-assembly / Items	Part No.	Unit	Unit Rate in (Rs)	Quantity in No

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